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SYDNEY, SATURDAY, FEBRUARY 5, 1955

No. 6

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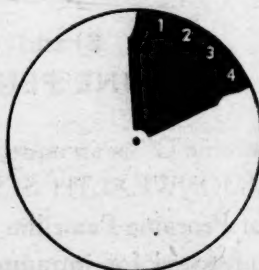
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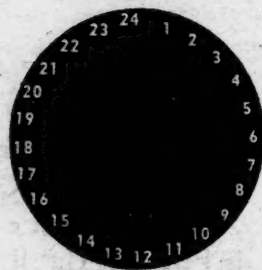
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SOCIAL PERSPECTIVES IN MEDICINE¹

By ERIC G. SAINT,
Perth.

THERE is a current joke which defines psychology as the study of the id by the odd. For some curious reason the psychologist, the psychiatrist and the social scientist have always been fair game for the George Robeys of clinical medicine, who delight, for example, in misnaming a psychiatrist a trick-cyclist. The non-psychiatric clinician is, however, an inveterate dweller in glass houses who dislikes having the joke turned upon himself; it is doubtful if any earnest cardiologist would welcome being called a heart-farrier. This play of words seems to indicate, notwithstanding the lip-service paid to the current concepts of psychosomatic medicine and the establishment of chairs of psychological medicine in our schools, a considerable hiatus, the perpetuation of which is not in the best interests of science or of humanity, in the viewpoints of those who practise clinical medicine and surgery and those who study the many aspects of human behaviour. In some degree this hiatus is the consequence of semantic diff-

culties. To the down-to-earth clinician the jargon of modern analytical literature is incomprehensible, just as the jargon of the modern biochemical clinician is incomprehensible to any but those initiated into the tribal rites. Indeed, it would appear that the Hippocratic oath is being supplanted by a plethora of specialist creeds, the integration of which is becoming increasingly difficult. But whether semantics, previous educational experience, or sheer intellectual obstinacy is the cause of the lack of *rapprochement* between the clinician and the individual and social psychologist, it is clear that the gap must be bridged. The near-perfection which has been achieved in modern surgical techniques, and the success which has attended biologists in their fight against microbial infections, have accentuated the existence of a number of sociological problems in medicine which in our present state of education and organization we are unable to solve. These problems, which are of mutual interest, are the subject of my remarks this evening.

Social Medicine Defined.

It might be as well to begin by defining social medicine as indefinable, for the reason that it is not a separate discipline like psychiatry or dermatology, but an attitude of mind which views the pattern of disease in a population as a reflection of the cultural structure of society and the occupational pursuits of its members. The use of the term

¹ Read at a meeting of the Western Australian Branch of the British Psychological Association on November 1, 1954.

social medicine might well be abandoned as having a rather dreary connotation with sanitary inspectors and water closets; for it we might substitute human ecology as more adequately descriptive of the study of total environment, which includes Claude Bernard's internal environment and the external environment of both the biologist and the social anthropologist, of man in relation to the disease to which he is heir.

The importance of social medicine, or human ecology, is to be seen with greatest force in this mid-twentieth century world in the underdeveloped countries which face Malthusian catastrophe, where frantic endeavours are being made to increase food production in the face of an alarming expansion of population. There the predominant pattern of disease is protein starvation, chronic malarial and tuberculous infection among a backward peasantry of low productivity and high fertility. It is of great significance that the conventional techniques of medicine are doing little to alleviate the problem. The control of malaria and tuberculosis serves only to diminish further the number of food Calories available per head to nearer-starvation levels. Behind the harsh criticism of physicians made by William Vogt that they "have set the stage for disaster, and like Pilate have refused to face the consequences" lies the truth that in the solution of the health problems of a country like India, the agricultural scientist, the schoolteacher, the social scientist and the psychologist have each a part to play of equal importance to that of the clinician. For our present purposes one would single out the social anthropologist as the person who alone can understand cultural attitudes to the practice of birth control and crop cultivation upon which the success of so many schemes for food production and population limitation depend.

Disease as a Social Phenomenon.

This concept of human ecology is a recent historical development which is not yet fully incorporated in contemporary medical thought. The history of medicine could be written in terms of the concepts of disease which have prevailed in response to an ever-changing intellectual climate, from the belief by primitive man that disease was due to the displeasure of gods, to the belief of Edwardian man, exemplified in an exaggerated form by Sir Almroth Wright and castigated by George Bernard Shaw, that germs were the only significant cause of disease. Since the practice of medicine is concerned with individual patients, there has always been a tendency in treatment, since the days when an attempt was made to exorcise evil spirits, to consider individual causes of disease. Thus the student's textbooks of medicine list disease under topographical (diseases of the heart, central nervous system, lungs *et cetera*) and aetiological classificatory systems. Disease of an organ or system of the body is regarded as being either of inherited or acquired origin, and if acquired, as being due to traumatic, infective, "degenerative", neoplastic or nutritional causes. Now, as a concession to the dictates of modern psychiatrists, it is agreed that psychological maladjustment and emotional dissonance may lead to profound bodily dysfunction, and of course, since Charcot and Kraepelin, the existence of "pure" psychoneuroses and psychoses has been unchallenged. In actual fact sick patients do not fit so neatly into these abstract textbook pigeonholes.

The concept of disease as a social phenomenon actually preceded the bacteriological era of medicine. "If given wages will not purchase such food and lodgement as were necessary for health, the rate-payers, who sooner or later have to doctor or perhaps bury the dead labourer when starvation or filth disease have laid him low, are in effect paying the too late arrears of wages which must have hindered the suffering and sorrows" was written not by one familiar with microbiology or nutritional biochemistry, but an outraged humanitarian, Southwood Smith, who, with the other "sanitarians", Chadwick and Simon, changed the face of industrial Britain in less than half a century. The discoveries of microbiologists merely lent academic support to a movement which had its origins in social discontent and disgust at the misery imposed by too-rapid industrialization and urbanization. Medical historians

might find food for thought in a careful study of the nineteenth century, as an illustration that scientific discovery does not always causally precede sociological change.

The marriage of humanitarianism and microbiology led quickly to the development of what we know as the Public Health Movement, beginning as bureaux of vital statistics and training grounds of medically qualified sanitary inspectors, but developing in the fullness of time into institutions championing the cause of preventive medicine everywhere, in the factory and the home, among expectant mothers and their children, and among industrial workers. As a result of this intense activity, in which knowledge contributed by demographers, epidemiologists, microbiologists and clinicians has been pooled, we have, all of us, come to regard disease as a social problem requiring administrative action. A century ago the ideas of health and social insurance propounded by Sir William Beveridge would have been considered extreme even by a fervent Chartist; but one way or another in 1954 most western democracies subscribe to the basic principle that health is the natural heritage of all and that much disease has its origins in the social conditions of poverty, bad housing, and overcrowding, the prevention of which is now accepted as a major function of government. The definition of health given by the World Health Organization as a state of physical, mental and social well-being sums up our changed attitude. Slum clearance, the provision of milk to schoolchildren, the detection of tuberculosis, and health insurance schemes are all logical developments of the movement initiated by those zealous and admirable sanitarians.

The humanitarian movement has, moreover, introduced into contemporary practice sociological considerations in the treatment of disease where formerly biological considerations only claimed the attention of clinicians. The history of tuberculosis serves as a good example of the changes which have taken place in our management of a particular disease. Its clinical manifestations were tabulated by Laennec; the German pathologists described its morbid anatomy; Robert Koch isolated the causative micro-organism; for many decades interest was equally divided between the biological relation of the host and its parasite and the practical problems of collapse therapy; and within the last five years interest has centred on chemotherapy and the direct surgical attack on the diseased lung. But the major factors in reducing the incidence of tuberculosis have been improvement in housing conditions, the increase in real wages, and shortened hours of work; and the aspect of treatment which has made the outlook of a tuberculous patient more tolerable has been rehabilitative after-care and the provision of a financial allowance to himself and his dependants. Here we see medicine reaching its highest achievement: the early detection of disease in the home or the occupational group, efficient eradication of disease, and enthusiastically prosecuted after-care.

Industrial Health.

Occupational medicine, a development of the last two or three decades, could also be regarded as the efflorescence of the movement initiated a century ago by Lord Shaftesbury, whose good Tory blood boiled at the sight of exploited mine and factory workers. The whole of modern scientific technology has been brought to bear in the protection of the worker against the physical hazards to which he is exposed in his occupation. The strange thing is that while the employer bears no resentment against the factory inspector, he still harbours some suspicion against the industrial psychologist, and is surprised that sickness-absence rate rises and production rate falls when in times of pressure he disregards rules of occupational hygiene which have been accepted beliefs since the First World War.

In coalminer's nystagmus, a curious occupational disease unfamiliar in Australia, is to be illustrated the close interrelationship which exists between occupation and clinical manifestations, and the need for enlightened sociological after-care. In the north of England the illumination at the working coal-face is often extremely inadequate.

Working in this environment many men developed an objective rotatory nystagmus and a sequence of symptoms which rendered them unable to carry on their exacting work, notably a complaint that the lights appeared to move, an unsteadiness on their feet, and headaches. Fear of loss of employment engendered fatigue, anxiety, depression and insomnia. Ultimately the sufferer was forced to cease work and was given compensation. With rest his symptoms subsided, but he usually had the greatest difficulty in convincing his own doctor, his employer's doctor and his union's doctor that he was fit to return to his old job; he was branded, as it were, by the roll of his eyes. Now if a hewer of coal in one of these small colliery villages lost his job there was no other form of employment open to him. Here, indeed, was a piece of administrative folly. In the first place there was ample evidence that by improving the illumination at the coal-face no one need ever get nystagmus, and secondly no one ever made the simple experiment of employing a man who had supposedly recovered after a period of rest. In consequence, hundreds of men were heartlessly banished to protracted unemployment.

A similar lack of clarity of thought colours our own handling of the workman with the injured back. The duration of disability is uncertain, partly in consequence of lack of precision in anatomical diagnosis; the workman may be fearful of losing a job he likes and knows, while his employer may be unwilling to reemploy a possible passenger; an undignified conflict of opinion may arise between doctors; so that in the unfortunate patient what began as organic pain with justifiable anxiety ends as true conversion hysteria.

The Social Origins and Consequences of Disease.

The practising clinician tends to make an arbitrary distinction between "social" and "non-social" diseases. All the occupational diseases, such as lead poisoning and silicosis, and many of the infectious diseases, such as murine typhus fever, tuberculosis, brucellosis, are, it is realized, of environmental origin requiring administrative action in their control as well as individual management. But that the prevalence of peptic ulcer, gall-stones, coronary artery disease, or certain forms of cancer and the psychoneuroses might also conceivably have their origins in the conditions of our social life is less clearly perceived. We have barely begun to subject these diseases to the close epidemiological study formerly applied to typhoid fever or poliomyelitis; such preliminary studies as have appeared have been highly rewarding. It has become clear that parents and schoolmasters are to be far more important figures than radiologists, sputum cytologists or chest surgeons in the prevention of carcinoma of the lung by ultimately destroying our cultural slavery to cigarette smoking; and it would appear from the studies of Norris and his colleagues that if we wish to postpone the onset of *angina pectoris* and to minimize its consequences we had better choose an active rather than a sedentary life—be bus conductors rather than bus drivers, or postmen rather than sorting clerks. In fact, the distinction between "social" and "non-social" disease, or between psychiatric and non-psychiatric disorder is quite artificial. Very good doctors have, of course, always taken into consideration the personality of their patient and the environment whence he came in fashioning the advice given at a consultation. But now our very insistence on introducing special courses on social medicine and psychological medicine into the curriculum of the undergraduate and the post-graduate is in danger of accentuating that divorce to which reference was made earlier. Moreover, the modern technology of diagnosis—the radiology, the biochemistry, the endoscopy—is in danger of becoming the end in point of interest and recompense rather than the means of rehabilitating a patient to society.

With a view to exploring the no-man's land which lies between medicine and sociology and social anthropology, I have subjected the experience of myself and my colleagues with 250 new in-patients, and 150 out-patients to critical analysis. Caring for patients in a modern hospital is an expensive business. If the salaries of my colleagues and the overhead costs of each occupied bed are considered,

then the price of this paper would be dearly bought, at approximately £30,000. Rendering the value of our work with patients to statistical analysis is, however, a much more difficult task.

One cannot readily measure the relationship of the environment to ill health or the effect of ill health on a patient's ability to adapt himself to the environment. There were very few instances (less than 5%) in which a direct causal relationship between the environment and disease, as in silicotuberculosis, could be established. But when one reflects upon the more subtle influences of our culture, a considerable body of preventable morbidity is brought to light. A third of our patients were over sixty years of age and in about a third of these patients ill health was the result of poverty and poor living circumstances. Twenty years ago the social problem of poverty was related to the economics of a depression, but now it is a problem of demography. In a fifth of our patients decades of overeating had induced an obesity which there is reason to believe accelerates the course of hypertension and atherosclerosis (which were the commonest causes of death), gall-stones and diabetes. In 5% of our patients persistent indulgence in alcohol had caused irreversible damage to the liver, fatal in six instances; 15% suffered from psychotic disorders or psychoneuroses. While you may be inclined to place more weight on genetic factors than on environmental influences in the genesis of mental ill-health, the latter cannot be ignored. At an approximate estimate therefore, in 40% of our cases the ultimate origin of disease could be traced to what might be called sociological causes. Were our cultural habits different, and could we exercise greater restraint in our eating, smoking and drinking habits and suffer less guilt over our sexual habits, and could we always be square pegs in square occupational holes, much morbidity might be avoided.

The social consequences of disease are perhaps less difficult to measure, loss of livelihood and descent in the social scale being the most obvious results of ill health. The ability to rehabilitate the hospital patient in society does not match the immediate success obtained with drug or scalpel. About half of the old patients returned to unsatisfactory home conditions. All but two of the alcoholics returned to their bibulous habits; one committed suicide several weeks after leaving us. Very few of the psychoneurotics improved; many indeed were possibly made worse. Difficulty was experienced in finding suitable work for some of our middle-aged male patients afflicted with heart and chest disease. In short, we failed to place about a quarter of our patients either in productive employment in society or in living conditions which one could be confident would have no harmful influence on future progress.

Here, then, is a paradox which is not easily soluble. Hospitals are becoming, as it were, better and better repair shops for a society, used to the principle of the survival of the fittest, which has not yet learnt to make the fullest use of patched up bodies and minds.

From this experience of ours it is appropriate on this present occasion to single out three problems for brief comment. In order of priority one would accord geriatrics the highest place as most deserving of our mutual attention. There are large numbers of elderly people eking out pitiful existences in most unsuitable accommodation in our large cities. Impaired function is only to be anticipated in the seventies, but everywhere there is evidence that unhappiness and enfeeblement are accelerated by enforced loneliness and suboptimal nutrition. The problem of the aged is of our own making and one which cannot be solved by the raising of a pension a mere shilling or two, or by the introduction of a Pensioner Medical Scheme, or even by building expensive Homes of Peace which can subserve but a small proportion of the need in accommodation of the aged population. The answers lie deep in our culture. We must be prepared to retain until the end the aged person as a member of the family group, to reinstate the dignity of the family. Government agencies will have to ask themselves whether the three-roomed boxes which are called homes in modern suburbia are fit places to accommodate grandparents, parents and four

children. If they are not, then for every ten houses erected for young families in new housing estates it is met that one house for an elderly couple should be built. Likewise it is fit that in regional hospital planning more careful attention should be paid to the proportion of beds to be allocated to the chronic elderly sick, for clearly our present practice of caring for many of these aged patients in expensive general hospital beds is wasteful. The expansion of domiciliary nursing services, and of home help schemes has lagged behind existing human needs in Australia for want of interest. In psychology and the social sciences we have yet to learn more about attitudes, role and mental and physical capacity in old age before we attempt to make fuller use of old people in a productive capacity. The clinical techniques exist to alleviate the suffering in the degenerative diseases of old age; what is lacking is our capacity to make them fully available to the multitude of aged, and our ability to create an environment in which the aged can live happy and even useful lives.

Alcoholism is a social problem of considerable magnitude in Australia. At least 5% of our patients were placed in the rather arbitrary category of chronic alcoholism. Whilst treating the diseased livers and wrecked nervous systems of these patients one inevitably pondered over the question of why these people drank so excessively, and over one's utter inability to reclaim this class of humanity to normal decent ways of living. The answer of the psychiatrist is a glib one: alcoholics drink to escape guilt of one sexual kind or another. But there must be many thousands of non-alcoholics living with equally heavy burdens of unconscious guilt. Probably the whole question is more subtle. Perhaps the alcoholic drinks to inflate his ego in a complex environment in which he has never felt secure or adequate. Be this as it may, medicine has notably failed in its efforts to cure alcoholism, and we have to admit that a lay body, Alcoholics Anonymous, has had far greater success in entering the diseased soul of the alcoholic. Probably our best way of tackling the problem on a large scale would be to invite Alcoholics Anonymous and social psychologists to work in collaboration with us in preventive and curative out-patient clinics attached to our general hospitals, feeding centres for rehabilitative after-care.

It would be ridiculous to try to discuss the whole problem of mental hygiene in the little time available. The immensity of the problem at all levels of society impresses us all, and our personal inability to help our patients to readjust themselves to their environment is the cause of much frustration. At least one-fifth of our patients were suffering from psychoses or from major psychoneuroses, and the great majority of them did not require institutional care. With common-sense explanation and the aid of existing social agencies we were able to answer the pressing problems and to relieve the symptoms of some of our patients, but there remained the hard core of fixed psychoneurotics who are seemingly unapproachable and beyond help. It is true that Australia, and Western Australia in particular, is short of psychiatrists, and that hospitals have not developed psychiatric out-patient facilities to anything like the extent necessary to serve the existing needs. But when one dissects each individual problem—the hysterical child of the broken marriage, the anxiety state of a Pole in an alien culture, or the supposedly unemployable epileptic—one realizes that the roots of much mental ill health are embedded in the soil of our culture and are not therefore easily correctable by training just more and more psychiatrists working in bigger and better out-patient clinics. Analytical psychologists have demonstrated beyond contradiction that much individual neurosis has its origin in the insecurity felt by the infant in an abnormal family setting. It would seem that the immediate implication of all this highly important work in child psychology is not the more detailed pursuit of knowledge of the child's sexual fantasy life but the application of the knowledge already gained to our cultural life, in the education of parents, schoolteachers and doctors, in the dissemination of our concept of the unity and dignity of the family throughout all sections of the community, and in the adaptation of the law, educational practice and hospital administration to fit the concept.

Moreover, there is need to study in greater detail the sociological causes of psychoneurotic breakdown in adult life. That suicide and alcoholism are epidemiological problems is obvious enough; that schizophrenia and affective disorder and the anxiety states are also social problems is more than likely; but our understanding of roles, attitudes, peck-orders and what you will in the various national, rural, industrial and religious groups which comprise modern society is still, one suspects, at a primitive stage. It is already uncomfortably apparent that social factors are of considerable importance in prognosis and rehabilitation. The observation made by an American psychiatrist that the rehabilitation rate of upper middle class schizophrenics was thirty times as good as in patients drawn from the lower income brackets is a disturbing indication that prognosis is related to economic status and that the unaltered unsympathetic competitive environment to which the mentally sick patient must ultimately return vitiates much of the benefits conferred by physical treatment. There was more than just humour in Mr. Charles Chaplin's picture of "Modern Times".

Conclusions.

The reminder that medicine has a sociological and humanitarian content is important in an era when a visitor from another planet might think that its practice was either a technology or a business. It has always been the function of medicine to ensure that each individual is enabled to use his or her inherited mental and physical capacities to the full, so that "he or she may achieve a state of mental, physical and social well-being". This cannot be achieved by concentrating a disproportionate amount of money, energy and research on the purely physical aspects of disease within the four walls of immense and lavishly equipped modern hospitals. The needs of society will be most satisfactorily met only if we can create a more delicately poised structure of high class general practice, inspired preventive health services, intelligently operated preventive mental hygiene machinery, and enlightened rehabilitative after-care for the physically and mentally disabled. To create this structure of a fully comprehensive health service and to effect the necessary integration of thought and practice, new attitudes will have to be adopted in our profession. In the past the clinical practitioner has looked largely to the morbid anatomist and the microbiologist, and lately to the biochemist and the pharmacologist for inspiration in the treatment of disease. But now it is plainly desirable that he should listen with patience and understanding to what the psychologist and social scientist have to tell him about cultural patterns and human behaviour in relation to the origins and consequences of disease, and that he should learn to work in close and friendly collaboration with a new generation of social workers, hospital administrators, industrial personnel officers, rehabilitation officers, child guidance workers, infant health nurses, all of whom have accepted and share responsibility for the prevention of mental and physical ill health. By an intellectual *voilà* the doctor must become the leader in society of this team instead of its cynical critic.

It is likely that the consequences of this changing outlook in medicine will be far-reaching. For one thing we must begin to accept its implications in medical education. Our present practice is to add to the clinical base of the medical undergraduate's cocktail a dollop of pathology and microbiology, and a dollop of what we have been pleased in the past to call social medicine and psychological medicine. It would seem desirable that we should begin to introduce the concepts of knowledge of human individual and social behaviour at an early stage, when the relations of the femoral artery are being taught, and that later, with patients, we should discuss not only abstract disease entities but individual human, occupational and family problems, reminding ourselves, as Charcot reminded his contemporaries, that there are no diseases, only sick patients. Similar considerations apply to the education of nurses whose training has hitherto been centred exclusively in the hospital wards where disease is viewed in

terms of enemas, drips and hypodermic syringes. Indeed, the dominance of the hospital in the framework of organized medicine is a potentially dangerous trend which must be watched carefully and held in check. Among the claimants for subsidization the large general hospital gets the fattest cheque of all, despite the fact that only a small proportion of morbidity in a community requires hospital care. The little world of the hospital is itself so complete, so interesting, so absorbing, so satisfying that many young doctors and nurses have no inclination ever to leave it, swelling the ranks of so-called specialism at the expense of good general medical practice or nursing practice in the community.

It has already become apparent that the sphere of influence of the public health worker is broadening. Whereas in former years he was merely a medically qualified sanitary inspector, we now expect him to be an active field worker with sound clinical experience in either general or psychological medicine and to have a particular aptitude for educating the public in the newer concepts of the prevention of ill health, in how to bring up children, in what to eat, and in how to avoid the more obvious physical and mental hazards in industry and society. We must hope that the interest in the ecology of man of the Diplomat of Public Health will extend beyond the realm of pathogenic viruses and bacteria so that ultimately he may provide us with epidemiological data on the prevalence of such things as minor respiratory morbidity, the psychoneuroses, peptic ulcer, degenerative cardio-vascular disease, and so on, among different social and occupational groups to lighten the dark corners of our knowledge.

It is unlikely that even our legislation will remain sacrosanct as our finer understanding of the sources and effects of morbidity improves. For example, the disparity which exists between awards given for injuries in the civil courts and in workers' compensation litigation is striking. The underlying principle of social insurance must surely be not only the arbitrary economic assessment of injury or ill health, which must vary from case to case, but the determination to prosecute immediate rehabilitative action in an endeavour to return an injured worker as soon as possible to his old job or to a new sort of productive activity. At present the law itself is often a procrastinatory influence on social rehabilitation.

Finally it is to be hoped that an increasing proportion of funds available for research into the causes of illness and the management of sick people—and this expression is used in preference to the more imposing term "medical research"—will be spent on projects involving the collaboration of medicine and the social sciences. In an age when it is conventionally considered that research cannot be conducted without the paraphernalia of electron microscopes and scintillometers it has become clear that the law of diminishing returns is beginning to operate. This is a minority view: the ultracentrifugists, the electrophoretists, and the electron microscopists in clinical medicine can claim that ultimately their discoveries may have general application to the treatment of disease now obscurely understood. But the divorce between academic research in medicine and the common morbidities which account for the bulk of unhappiness and economic loss is widening, and what to do with old people, alcoholics, psychoneuroses, children with behaviour problems, the common allergies and chronic bronchitis is something we want to know rather urgently. This problem of the most effective use of available funds in medicine is particularly relevant in our own rather impoverished State, which has a young university and as yet no Medical School. It would be possible, but outrageously expensive, to build up a large school orientated towards a biophysical and biochemical approach to disease; but it would be more desirable, I am sure you would agree, that we should approach our problems from their humanitarian, cultural and sociological aspects. When we have answered for ourselves the simpler problems of the care of the aged, the mentally ill, the rehabilitation of the injured or disabled wage earner, and we have achieved the highest standards in diagnosis and treatment of common disease; then only ought we be permitted to buy our first electron microscope.

ELECTROLYTE LOSSES WITH BILIARY FISTULA: THE POST-CHOLEDOCHOSTOMY ACIDOTIC SYNDROME.¹

By M. H. CASS, M.B., B.S.,² B. ROBSON, B.Sc., and
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FISTULA FORMATION and copious discharge of bile are common after biliary surgery. In some cases a drainage tube has been inserted into the gall-bladder or common duct, in others the duct has been injured, an anastomosis involving it has leaked, or a ligature has slipped from the cystic duct. The purpose of this paper is to examine the consequent electrolyte and water losses in the bile, to compare them with the corresponding losses by continuous gastric suction, and to illustrate their serious clinical and biochemical effects, if uncorrected.

Continuous aspiration of gastric contents quickly produces great depletion of electrolytes, often accompanied by alkalosis with severe constitutional symptoms even in healthy subjects (Nicol, 1940; Van Slyke and Evans, 1948), and the need for replacement therapy in patients who are ill and vomiting or have a gastric suction tube inserted is well recognized. It is curious that comparable losses of electrolyte and water with biliary fistulae, and their effects have largely escaped notice. In patients who survive and leave hospital with an established fistula, appetite and intake have been sufficient to make good the loss. The problem arises acutely in sick, jaundiced patients during the first weeks after operation, when the appetite is poor and the dietary intake is often inadequate. Copious loss of alkaline bile from a cholecholestomy may then lead to severe acidosis, electrolyte depletion and circulatory collapse.

Material and Methods.

The only ions considered in this paper are sodium, potassium and chloride. The expression "base loss" indicates the sum of sodium plus potassium ions and is used as a measure of "total electrolyte loss" in the alkaline bile. "Chloride loss" is used to indicate "total electrolyte loss" in acid gastric aspirate. Observations have been made on 14 patients with simple biliary fistulae or common duct drainage. They comprise a random and consecutive series. The bile was collected and measured in twelve-hour periods. The chemical estimations were carried out on twenty-four hour samples, sodium and potassium contents being determined with the Perkin-Elmer flame photometer (Model 52C), the chloride content by the method of Schales and Schales (1941). The pH was estimated with standardized indicator papers.

For comparison, data were obtained from 14 random patients who had undergone abdominal operations and were recovering without obstructive or other complications. In these patients drainage tubes were inserted, and aspiration was carried out continuously for five days through an intragastric tube, during which time nothing was taken by mouth. Such aspirates are, of course, not pure gastric juice, there being invariably admixture of saliva and regurgitated duodenal contents. In fact, three of the patients had undergone gastric resections, with gastro-jejunal anastomosis. In some others the tip of the suction tube may have passed through the pylorus. The aspirate data thus merely describe mixed salivary, gastric and intestinal contents; but they probably represent sufficiently well the usual loss from Levine tube suction after abdominal operations.

Results.

Daily determinations of the biliary sodium, potassium and chloride contents show that the values for the several electrolytes do not vary greatly in individuals or from

¹ Work done with the aid of a grant from the National Health and Medical Research Council of Australia.

² Holder of a grant from The Royal Australasian College of Physicians.

TABLE I.
Sodium, Potassium and Chloride Concentrations (Milliequivalents per Litre) and pH of Bile and Post-Operative Gastric Aspirate.

Electrolyte or pH.	Bile.			Gastric Aspirate.		
	Range.	Mean.	Number of 24-Hour Specimens Analysed.	Range. ¹	Mean.	Number of 24-Hour Specimens Analysed.
Sodium	123.0-158.0	144.0±8.8	50 (8) ²	31.0-145.0	98	40 (14)
Potassium .. .	4.5- 6.5	5.25±1.1	50 (8)	4.2- 24.0	12	40 (14)
Sodium plus potassium ..	127.5-164.5	149.0±9.9	50 (8)	35.2-169.0	110	40 (14)
Chloride .. .	93.0-144.0	120.0±7.7	50 (8)	93.0-149.0	122	40 (12)
pH .. .	7.0- 8.3	7.7±0.6	45 (8)	2.5- 8.0	3.9	40 (11)

¹ The figure in parentheses is the number of patients from whom specimens were obtained.

² Since the aspirate comprises a mixture of secretions varying in proportions in different subjects, the ranges of the ion concentrations and pH values are wide. Standard deviations have not been calculated because the values have not a normal distribution.

patient to patient, and this is indicated by the order of magnitude of the standard deviations (Table I). Moreover, even when the body is grossly deficient in these ions, they continue to be poured out in the bile, as was found in Case II (below). Gamble (1951), of course, points out that whereas the kidney is much more than an excretory organ, being intimately concerned with defending the chemical constancy of the extracellular fluid, the lungs, skin and gastro-intestinal mucosa are not thus concerned. This is evidently true also of the liver.

In Table I are compared the concentrations of sodium, potassium and chloride ions, and pH of bile and gastric aspirate. In bile the "base loss" is greater than the chloride loss and the reaction is alkaline. Therefore bile loss from the body tends to cause acidosis. This contrasts with the alkalosis often caused by loss of gastric aspirate, which is usually acid, and in which the "base loss" is usually less than the chloride loss.

CASE I.—The patient, a woman, aged sixty-seven years, had a long history of gall-stones and first presented with obstructive jaundice. By the time she was admitted to hospital her jaundice had disappeared; but at operation, in addition to calculous cholecystitis, a small stone was found firmly lodged in the lower end of the common duct. After cholecystectomy, this stone was removed by transduodenal meatotomy of the ampulla of Vater and a T-tube was left in the duct.

All the bile drained was collected, and also the gastric contents from continuous aspiration. The volumes of bile and aspirate were each measured at twelve-hourly intervals and their concentrations of sodium, potassium and chloride were estimated every twenty-four hours. Figure 1 shows that for the first five days the "total electrolyte loss" is slightly less in bile than in gastric aspirate. The volume of bile is seen to rise after three days.

We have evidence, to be published elsewhere; that the flow of bile is generally greatly depressed in the first few days after biliary surgery. It then rises and reaches a daily volume of approximately 500 cubic centimetres. The twenty-four hour volume in patients convalescing from operation has ranged from 100 to 1100 cubic centimetres.

Since the electrolyte concentration of bile does not vary greatly, the total electrolyte loss runs closely parallel to the volume drained, and it appears sufficiently accurate for clinical purposes to calculate the daily base loss and chloride loss by multiplying their average concentrations by the volume drained.

In Table II the average water loss, base loss and chloride loss in groups of patients are shown.

Though in the first five-day period the water, base and chloride losses are all less in bile than in gastric aspirate, recovery of normal bile flow soon raises the rate of base loss to considerably more and the chloride loss to only slightly less than the corresponding rates of loss by gastric suction. The progressive total after fifteen days shows the enormous cumulative deficit that could occur from simple T-tube drainage. The potentially serious consequences are illustrated in Case II.

CASE II.—The patient, a male, aged seventy-two years, was admitted to hospital with a six weeks' history of intermittent dull pain around the umbilicus, with itching of the skin, dark urine and pale stools. He had lost two stone in weight during the previous six months. A vague irregular mass could be felt in the epigastrium, and the gall-bladder was palpable.

A liver biopsy showed microscopic evidence of obstructive jaundice. On June 8, 1953, the abdomen was explored, an extensive carcinoma of the body of the pancreas being found. In view of the patient's age and poor general condition nothing more than the establishment of a choledochoduodenostomy was done. A Foley catheter was inserted, with its tip towards the porta hepatis, through a separate opening higher in the common duct. Its cuff was inflated, and its distal end was brought out through the wound so that all the bile drained externally.

With relief of biliary obstruction, his jaundice, as indicated by the serum bilirubin level, steadily decreased (Figure II). He withstood the operative procedure well and his general condition for the first four days afterwards appeared excellent. His fluid and electrolyte balance (Figure II) was satisfactory while intravenous therapy was maintained, and when this was discontinued he was allowed fluids *ad libitum* by mouth and was encouraged to eat. He did not vomit, but

TABLE II.
Average Loss of Water, Sodium, Potassium and Chloride in Gastric Aspirate and Bile.

Period After Operation.	Gastric Aspirate. ¹ (Data from 14 Patients.)			Biliary Drainage. ² (Data from 14 Patients.)		
	Water. (Cubic Centimetres.)	Sodium plus Potassium. (Milliequivalents.)	Chloride. (Milliequivalents.)	Water. (Cubic Centimetres.)	Sodium plus Potassium. (Milliequivalents.)	Chloride. (Milliequivalents.)
1 to 5 days .. .	2625	280	320	1827	273	219
6 to 10 days .. .	—	—	—	2512	375	300
11 to 15 days .. .	—	—	—	2513	375	300
Total loss in approximately two weeks .. .	—	—	—	6852	1023	819

¹ Complaint of discomfort necessitates removal of the Levine tube after five days in the absence of complications.

² In computing these losses, mean ion concentrations (Table I) have been multiplied by the volumes drained.

his appetite was poor. He took sweetened fruit juices and an occasional cup of tea, but little else. He became weak, dull and apathetic.

Careful day-to-day notes were kept of his clinical condition and detailed biochemical studies were made, with the results summarized in Figure II. The daily total electrolyte loss in bile was variable, but rarely exceeded 100 milliequivalents in twenty-four hours. Nevertheless the progressive total of the loss mounted rapidly. Dietary intake after the fourth post-operative day was clearly insufficient to replace the loss in the bile and urine. The serum levels of sodium, potassium and chloride fell markedly. By the end of the first week he was in substantial electrolyte deficit.

From the eighth day he was given daily a mixture orally containing sodium chloride, three grammes, and potassium citrate, three grammes, but clinically he failed to improve. The serum sodium curve shows plainly that the dose of this ion was inadequate to prevent a further steady decline, though the fall in serum chloride level was arrested and the serum potassium level began to rise. The patient's kidney function was good throughout this period. Urine volumes were large—700 to 1000 cubic centimetres per day—but the urine contained less than 10 milliequivalents of sodium and chloride per litre.

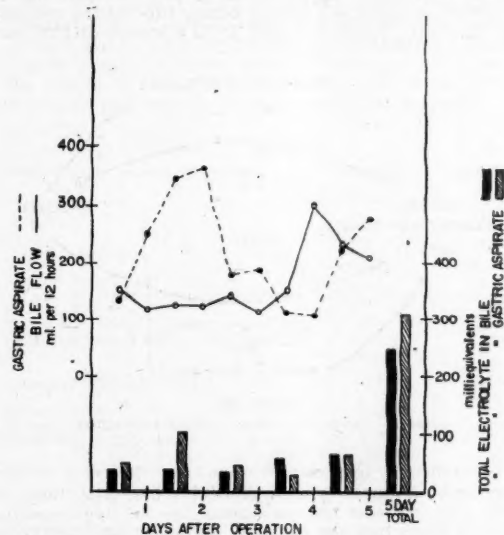


FIGURE I.

Comparison of water and ionic loss in bile and gastric juice (Case I). The daily loss and five-day totals are shown.

On the sixteenth and seventeenth post-operative days he suffered paroxysms of deep and exaggerated breathing associated with mental confusion and vasomotor collapse. On the seventeenth day he was given saline intravenously, enough to provide 190 milliequivalents of sodium. He improved dramatically. Within twenty-four hours his mental outlook, from being depressed and confused, became bright and cheerful. He felt stronger and suddenly very hungry. He was given grilled chops and he remarked: "I ate them like a dog."

From the nineteenth day, daily oral doses of sodium chloride and potassium chloride were 12 grammes and six grammes respectively. He progressed remarkably and his serum chemistry reverted to normal. But about ten days later—namely, from the twenty-eighth to the thirtieth day after operation—he again felt very ill and manifested weakness, pallor and collapse, though not so severe as previously. This short set-back was possibly due to hyperpotassaemia. It is noteworthy that at this time his appetite was not much affected, and when all medication was stopped he rapidly improved and was soon afterwards well enough to be discharged from hospital.

The following comments may be made on this case.

1. It is suggested that this patient illustrates precisely the type of biochemical and clinical upset to be anticipated from progressive uncompensated biliary electrolyte loss.

He illustrates what we may, in fact, term "the post-choledochostomy acidotic syndrome".

2. There is always a time-lag between the taking of specimens for analysis and the return and assimilation of the biochemical data. Consequently, though this patient

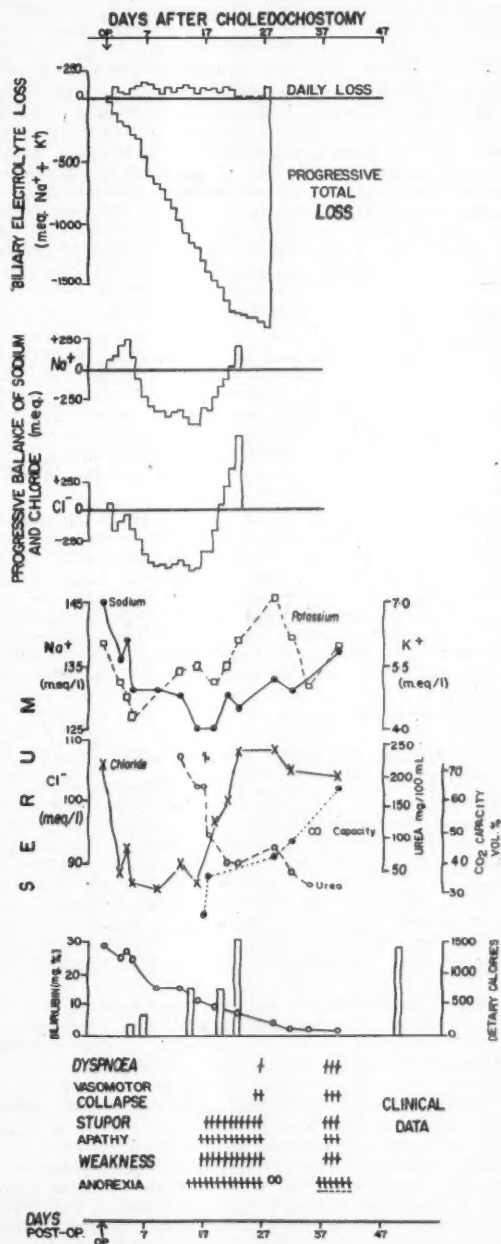


FIGURE II.

Clinical and biochemical data from Case II (see text).

was being closely studied, the full extent of his electrolyte deficit was not realized until he manifested very severe symptoms. In retrospect it was clear that, though he was given liberty to eat and drink from the fifth day onwards, this meant little. He took only cordials, and a little tea and milk. Though rich in potassium, fruit juices contain

only negligible amounts of sodium and chloride, and the supplementary dosage given orally in the mixture was inadequate.

3. Outstanding clinical features of his post-choledochostomy acidosis were the profound anorexia, mental depression, physical prostration and dyspnoea, all of which were relieved overnight by the intravenous administration of saline.

Discussion.

Extent of Biliary Electrolyte Loss.

Though the approximate daily secretion of bile in man has long been known, clinical demonstration that the average daily loss of electrolyte from a T-tube or biliary fistula may be greater than that by continuous gastric aspiration comes as a surprise. A duodenal fistula presents an arresting problem, and the associated electrolyte disturbances have been intensively studied (Denton *et alii*, 1951). By contrast, curiously little attention seems to have been paid to the more frequent but less dramatic problem of the biliary fistula, though in all papers concerning electrolyte management the need for replacing losses from wounds and fistulae in general is mentioned.

The probable explanation is that most patients with biliary fistulae can eat well and that they instinctively increase their sodium chloride intake. Alternatively, when the electrolyte loss is uncorrected its effects develop insidiously. The picture is not specific, merely that of a patient, often elderly, who weakens progressively and dies two or three weeks after operation. Often the bile has been escaping into the dressings and the extent of the daily loss is not realized by the surgeon.

Indeed, precise knowledge of the amounts of bile secreted by man in health and disease is lacking. Our own data suggest that the daily flow rarely exceeds one litre. If the volume of fluid escaping from a T-tube or fistula greatly exceeds this figure, the possibility of the existence of a combined biliary and intestinal fistula should be considered. Such combined loss must for example have occurred in Goulston and Smith's (1951) case; a choledochoduodenostomy had been established, and up to 4800 cubic centimetres of "bile" drained from a T-tube in the common duct in twenty-four hours.

Post-choledochostomy Acidotic Syndrome.

The symptoms of the post-choledochostomy acidotic syndrome are essentially those of sodium chloride depletion, with superadded acidosis, since more sodium is lost than chloride. Bland (1952) emphasizes that the symptoms of sodium chloride deficit are unfortunately vague and unimpressive. There are anorexia, apathy and weakness, but little else until the depletion is far advanced, when stupor deepens and there are attacks of sudden vasomotor collapse especially on sitting up. These depend on decrease in the vascular compartment's volume with vascular hypotension.

If severe cholæmia has preceded the operation, anorexia and general physical depletion may have set the stage for the development of post-choledochostomy acidosis. Sodium chloride depletion is characterized by anorexia, and the anorexia and consequent poor intake in turn aggravate the sodium chloride deficit. Thus a vicious circle may develop (Figure III).

The patient's appetite and diet in the first seven to ten days are the decisive factors, unless the losses of electrolyte from the fistula are foreseen and replaced in a mixture given by mouth or added to the intravenous input. We do not know how frequently malnourished jaundiced patients have gradually deteriorated and died in acidosis after choledochostomy. We suggest that it has not been a rare cause of the death of patients who have failed two or three weeks after operation. Deterioration may occur earlier; Chassin (1954) cites an elderly patient with obstructive jaundice who developed acidosis, circulatory collapse and anuria six days after choledochostomy.

There is evidence also that the true nature of the disorder has not been recognized even when the relevant biochemical data have been available, as in a case cited

by Cole and Laws (1952). The patient had typical biochemical findings, including a carbon dioxide combining power in the serum of only 23 volumes per centum. The daily bile loss from a tube in the common duct was 800 to 1000 cubic centimetres. Nevertheless the patient's coma and vasomotor collapse were attributed to vomiting.

Treatment of post-choledochostomy acidosis presents no problem. Awareness of the possibility of its existence in the stuporose, failing patient is all that is necessary. Biochemical confirmation is obtained in the low urine chloride excretion, and the low serum sodium and chloride contents and carbon dioxide combining power, together with the raised blood urea level. Correction of the deficit by oral or intravenous sodium chloride therapy characteristically produces a dramatic improvement in mental and physical status.

With awareness of the problem, prevention is easily achieved. The daily loss from the fistula is measured and replaced intravenously by an equal volume of saline. Thus about 500 cubic centimetres of bile usually drain daily, and this can be replaced by half a litre of isotonic saline, or if the patient is being fed orally, four grammes of salt are given in a mixture. Measurement of bile loss presents no problem when there is a snugly fitting tube in the common duct. When the bile is escaping from a wound fistula there

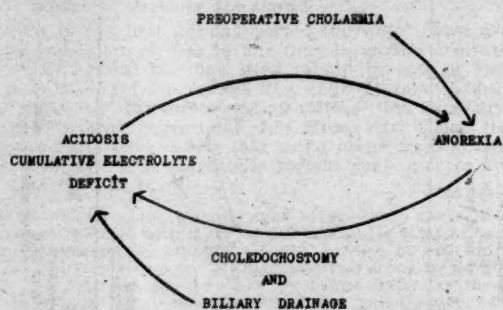


FIGURE III.

Acidotic syndrome after choledochostomy.

is more difficulty, but we have found the following method convenient. A Davol type of colostomy bag is strapped on firmly with its cuff inflated round the fistulous opening. Bile then flows into the bag and can be drained away continuously into a bottle through a flanged tube attached with rubber cement to the edges of a hole cut in the most dependent part of the bag. All the bile lost can thus be collected and measured from day to day. Moreover, the patient is saved the discomfort of bile-soaked bandages and innumerable changes of dressings.

Summary.

1. Measured over five-day periods after operation, the electrolyte and water losses from a biliary fistula are of the same order as those from continuous gastric aspiration.
2. With the uncorrected loss of biliary electrolyte, sodium is lost from the body fluids in excess of chloride. Base deficiency with acidosis results, contrasting with the chloride deficiency and alkalosis of uncorrected gastric loss.
3. A syndrome, here termed the post-choledochostomy acidotic syndrome, is described and its treatment is indicated.

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ISCHAEMIC HEART DISEASE: A STATISTICAL STUDY.

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The association of hypertension with ischaemic heart disease is one of considerable interest, and has been investigated many times both from the clinical and the pathological points of view. Table I gives in summary form the results of a number of different observers, and shows the very considerable variation in their findings.

TABLE I.

Some Previous Reports on the Incidence of Hypertension in Ischaemic Heart Disease.

Authors.	Number in Group.	Hypertension.	
		Criteria. ¹	Incidence.
Levine and Brown (1929)	145	160/100	40%
Levy and Boas (1936)	169 women	182/103 (average)	89%
Riseman and Morton (1937)	1059 men	159/99	Less than 50% Slightly less than 50%
Palmer (1937)	212	160/100	73%
Clawson (1939) ²	928	150/90	69%
Davis and Klainer (1940)	51 men	150/90	60%
	9 women	150/90	90% (sic.)
Parker <i>et alii</i> (1940)	3440	Changes in fundus oculi	55.5%
Cassidy (1946)	779 men	160/100	55.4%
	221 women	160/100	69.7%
Summers (1948)	87 women	100 (diastolic)	71%

¹ Figures refer to blood pressure, systolic/diastolic, millimetres of mercury.

² Post-mortem series, the criteria being a history of hypertension during life, or cardiac hypertrophy at post-mortem examination in the absence of any other known cause.

Most figures given for the incidence of hypertension of clinical importance in patients presenting with ischaemic heart disease seemed to be too high, especially in regard to women. It was decided to investigate the matter again, with the use of sufficiently large numbers to give statistical significance, and at the same time to determine male to female ratios at different ages with and without hypertension, and also to determine the true age incidence of ischaemic heart disease in either sex, related to the population at risk at different ages.

Material and Method.

The patients suffering from ischaemic heart disease were found by reviewing the case histories of about 9000 patients with real or suspected heart disease referred by their own doctor to the National Heart Hospital, London, for examination and opinion. An electrocardiogram was taken and radiological examination carried out in all cases, and other special tests or investigations were undertaken when indicated.

¹ This investigation was carried out at the National Heart Hospital, London, during the tenure of a Nuffield Foundation Travelling Fellowship in Medicine.

The diagnosis of ischaemic heart disease made by the visiting physician was accepted, it being confirmed in the vast majority of cases by abnormalities in the electrocardiogram either at rest or on exercise. No attempt was made to distinguish between *angina pectoris* (angina of effort) and cardiac infarction, both being accepted, in the absence of complicating conditions, as evidence of atherosclerosis of the coronary arteries. Often both these clinical syndromes occurred at different times in an individual patient. As far as possible all patients with complicating conditions other than hypertension were excluded, in particular those suffering from rheumatic valvular disease, congenital heart disease, syphilis, thyrotoxicosis,

TABLE II.
Age and Sex Distribution of Ischaemic Heart Disease.

Age Group. (Years.)	Males.		Females.		Total.
	Normal Blood Pressure.	Hypertension.	Normal Blood Pressure.	Hypertension.	
25 to 29	1	—	—	—	1
30 to 34	3	—	1	—	4
35 to 39	13	2	1	1	17
40 to 44	60	16	5	7	88
45 to 49	138	45	14	8	205
50 to 54	180	78	20	32	310
55 to 59	151	81	32	42	306
60 to 64	180	80	38	48	346
65 to 69	94	57	24	35	210
70 to 74	38	22	13	11	84
75 or more	15	7	2	5	29
All ages	873	388	150	189	1600

myxœdema, diabetes or anaemia of significant degree. It was of interest to note that there were 12 women aged between forty and fifty years suffering from *angina pectoris* and anaemia, whose cardiac symptoms were completely relieved by treatment of their anaemia.

The upper limits of normal blood pressure were taken as 160 millimetres of mercury, systolic, and 100 millimetres, diastolic. If the diastolic pressure was less than 100 millimetres of mercury, the patient was classed as normotensive even if the systolic pressure was higher than 160 millimetres of mercury. If the diastolic pressure was 105 millimetres of mercury or more, the patient was classed as hypertensive regardless of the systolic level. In borderline cases, the patient was regarded as within the normal range unless a diastolic pressure of 100 millimetres of mercury or more was recorded on more than one occasion together with a systolic pressure of 160 millimetres of mercury or more, or unless there was evidence of previous hypertension, such as strong left ventricular preponderance in the electrocardiogram, enlargement of the left ventricle on radiological examination or hypertensive changes in the fundus oculi. Severe hypertension, with systolic pressures greater than 240 millimetres of mercury or diastolic pressures greater than 130 millimetres of mercury, was quite uncommon in association with ischaemic heart disease. It should be emphasized that blood pressure levels in these patients vary considerably over a period of time, even in the absence of cardiac infarction. A rise in diastolic pressure was commonly found after cardiac infarction, even amongst those patients whose blood pressure was previously normal. Infarction often produced a fall in systolic pressure, which tended to rise towards its previous level with the recovery of the patient.

Results.

There were 1600 patients suffering from ischaemic heart disease, with or without hypertension, and the distribution in the various age groups in either sex is set out in Table II.

An attempt was made to show the true age incidence of ischaemic heart disease in either sex related to the population at risk in each age group. The population figures were

TABLE III.
Age Incidence of Ischaemic Heart Disease Related to the Population at Risk.

Subjects.	Age Group (Years).										
	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 or More.
Males:											
Population at risk (thousands)	1020	1549	1638	1688	1569	1327	1096	950	779	587	602
Ischaemic heart disease (cases)	1	3	15	76	183	258	232	260	151	60	22
Incidence (per million)	0.6	1.9	0.1	45	117	194	212	274	194	102	37
Females:											
Population at risk (thousands)	1633	1575	1687	1711	1629	1491	1340	1207	1042	842	961
Ischaemic heart disease (cases)	—	1	2	12	22	52	74	86	50	25	6
Incidence (per million)	—	0.6	1.2	7	13.5	34.9	55.2	71.3	50.6	29.7	6.2
Male to female ratio	—	—	7.6:1	6.4:1	8.7:1	5.6:1	3.8:1	3.8:1	3.4:1	3.4:1	5.9:1

taken from the Registrar-General's "Statistical Review of England and Wales for the Year 1951", based on the 1951 Census. The results are shown in Table III and plotted in graph form in Figure I, the age incidence of ischaemic

heart disease in each sex being expressed on a logarithmic scale. The incidence figures are, of course, only relative, and do not represent the true incidence of ischaemic heart disease in the population at large. It will be seen that the incidence curve for women started rather more than five years later than that for men and did not reach the same height, but apart from these differences the two curves followed a remarkably parallel course at all ages. In both sexes the peak incidence

was at sixty to sixty-five years. Ischaemic heart disease was extremely uncommon below the ages of thirty years in the case of men and thirty-five years in the case of women.

The apparent sex ratios of ischaemic heart disease in three age groups, with and without hypertension, are given in Table IV.

Male preponderance was found in all age groups, and was less, but still apparent, in cases complicated by hypertension. As would be expected from the different age incidence in the two sexes, male preponderance was greater

in the younger age groups. The true sex ratios given in Table III, corrected for the population at risk, showed that the apparently greater female incidence over the age of sixty-five years was due to the preponderance of females in this part of the population.

The incidence of hypertension associated with ischaemic heart disease in either sex in three age groups is shown in Table V. Hypertension was almost twice as common in women with ischaemic heart disease as in men. In women

the incidence of hypertension was much the same in all age groups; in men it increased with advancing age. The strikingly different incidence of hypertension associated with ischaemic heart disease in the two sexes makes it misleading to quote figures for both the sexes together.

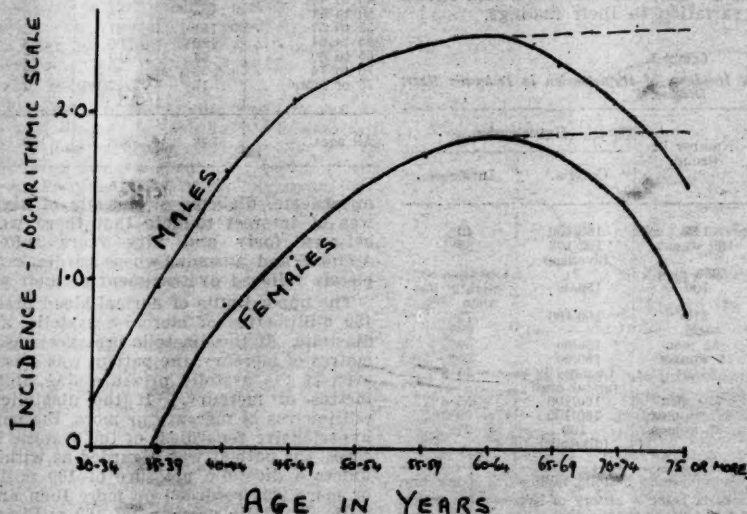


FIGURE I.
Age incidence of ischaemic heart-disease related to the population at risk.

TABLE IV.
Apparent Sex Incidence of Ischaemic Heart Disease.

Age Group (Years.)	Normal Blood Pressure.		Hypertension.		Totals.	
	Number in Group.	Ratio Males to Females.	Number in Group.	Ratio Males to Females.	Number in Group.	Ratio Males to Females.
Under 50	236	10.2:1	79	4.0:1	315	7.5:1
50 to 64	601	5.7:1	361	2.0:1	962	3.5:1
65 and over	196	3.8:1	137	1.7:1	323	2.0:1
All ages	1023	5.8:1	577	2.0:1	1600	3.7:1

TABLE V.
Incidence of Hypertension in Ischemic Heart Disease.

Age Group. (Years.)	Males.		Females.		Both Sexes.	
	Number in Group.	Incidence of Hypertension.	Number in Group.	Incidence of Hypertension.	Number in Group.	Incidence of Hypertension.
Under 50	278	23%	37	16 cases	315	25%
50 to 64	750	32%	212	57%	962	38%
65 and over	232	37%	90	56%	323	42%
All ages	1261	31%	339	56%	1600	36%

Discussion.

As was pointed out by White (1946), there are many fallacies in the statistical approach to the age incidence of ischemic heart disease. Sudden deaths due to coronary artery disease are not included in this series; it is doubtful whether these would greatly influence the age or sex incidence figures. A more important fallacy as far as the present paper is concerned is the fact that older persons suffering from ischemic heart disease, particularly those over sixty-five years of age who have retired from work, are less likely to be referred for a specialist opinion, or indeed may not consult their own doctor, accepting their disability as natural to advancing years. For this reason the incidence figures over the age of sixty-five years are almost certainly too low. It is probable that, if the true figures were known, the incidence of ischemic heart disease in both sexes would continue to increase slowly beyond the age of sixty-five years, as suggested by the interrupted lines in Figure 1.

The true male preponderance in ischemic heart disease, with or without hypertension, would appear to be about 3.5:1.0, with higher figures in the younger age groups because of the earlier onset of the disease process in men. If hypertensives are excluded, the male to female ratio is 5.8:1.0, and amongst those with hypertension 2:1, again with higher male preponderance in the younger age groups. Wood (1950) suggested that the sex ratio of ischemic heart disease approaches equality with advancing years. It would appear that the male preponderance continues into old age, if allowance is made for the changing proportions of the two sexes in the whole population.

The incidence of hypertension in this series is lower than that given in most previous reports. All observers are agreed that hypertension is much more frequent in women with ischemic heart disease than in men similarly affected. Some authors (Friedberg, 1951; Eppinger and Levine, 1934) suggest that ischemic heart disease is rare in women in the absence of hypertension, especially under the age of fifty years. The present figures do not support this view; less than half the women aged under fifty years suffering from ischemic heart disease were hypertensive, and above this age only a little more than half.

Summary.

The age and sex distribution of 1600 patients suffering from ischemic heart disease, with or without hypertension, is presented. Patients suffering from rheumatic valvular disease, congenital heart disease, syphilis, thyroid disorders, diabetes or anemia were excluded.

When related to the population at risk in each age group, the incidence of ischemic heart disease in women started a little more than five years later than in men and never reached the same height; otherwise the incidence curves in either sex ran a remarkably parallel course. The peak incidence in both sexes was at the age of sixty to sixty-four years, but it is suggested that the true incidence may continue to increase slowly beyond this age.

Male preponderance was greater in the younger age groups, but continued at about 3.5:1.0 into old age.

The overall incidence of hypertension in association with ischemic heart disease was 56% in women and 31% in men. In women this proportion was much the same at different ages, in men it increased with advancing years.

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CARBOHYDRATE TOLERANCE IN PREGNANCY.

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THERE is little information in the literature on the changes in carbohydrate metabolism during pregnancy. Many conclusions in the past have been drawn from studies of glycosuria; but, as the cause of this may be renal, it seems desirable to investigate the carbohydrate metabolism more directly by glucose tolerance tests. We present here the results of glucose tolerance tests, performed at monthly intervals throughout pregnancy, on 158 pregnant women.

Review of the Literature.

Morris (1917), Schiller (1919), Krebs and Briggs (1923), Rowley (1923), Welz and Van Nest (1923), Hirst and Long (1926), and Richardson and Bitter (1932) found

normal blood sugar values at the particular periods of pregnancy at which tests were made. Killian and Sherwin (1921) studied five normal pregnancies; they found the blood sugar values normal in three cases, and slightly raised in two. Mackenzie Wallis and Bose (1922) obtained glucose tolerance curves which were long drawn out and had a flattened top, and in which the blood sugar level was often still raised at two hours. Williams (1923) found normal curves early in pregnancy, with some lowering as pregnancy progressed. Gray (1923), in a study of 51 pregnant women, found curves which were longer in duration but lower than in non-pregnant women. The subject was reviewed by Ehrenfest (1924) and by Lambie (1926). Høst (1925) found impaired tolerance early in pregnancy, with a higher peak and slower fall of the curve. He found that tolerance improved in the second and third trimesters.

TABLE I.

The Fasting Blood Sugar Level in Pregnancy, by Month of Pregnancy.

Month of Pregnancy.	Mean Blood Sugar Content. ¹	Number of Observations.	Standard Deviation. ¹
2	89	12	17
3	89	89	16
4	87	132	15
5	89	144	18
6	89	145	18
7	88	145	17
8	87	139	18
9	88	110	16
10	85	60	17

¹ In milligrammes per 100 millilitres of blood.

Pillman Williams and Wills (1928) reported that pregnant women had glucose tolerance curves which fell within the normal range, and which tended to drop as pregnancy progressed. Some curves in glycosuric cases were of "lag" type, and these tended to rise later in pregnancy. Selman (1932), cited by Johnson and Bosnes (1949), found high, prolonged, or prolonged and high glucose tolerance curves in 22 of 47 pregnant women. Hurwitz and Irving (1937) thought that the carbohydrate utilization of some pregnant women was faulty. Nayar (1940) found blood sugar levels well below the average in normal pregnancies.

TABLE II.

The Blood Sugar Level Half an Hour after the Ingestion of 50 Grammes of Glucose during Pregnancy.

Month of Pregnancy.	Mean Blood Sugar Level at Half an Hour. ¹	Number of Observations.	Standard Deviation. ¹
2	131	12	17
3	125	89	27
4	125	132	23
5	125	144	26
6	126	144	26
7	125	143	25
8	125	133	23
9	125	105	23
10	124	53	25

¹ Milligrammes of glucose per 100 millilitres of blood.

Hurwitz and Jensen (1946) studied 25 healthy pregnant women by means of a glucose tolerance test performed at each trimester, using a three-hour test. They found normal fasting and three-hour blood sugar levels in all cases but one. The two-hour reading was abnormally high in a large number of their cases. The percentage of cases in which this occurred increased as pregnancy advanced, and 81% of their patients showed this abnormality at some time during the pregnancy. Hurwitz and Jensen concluded that pregnancy adversely affected carbohydrate metabolism. Weiden (1948) found a low fasting blood sugar level in many pregnant women; glucose tolerance curves were low in approximately half her cases.

Johnson and Bosnes (1948), using the intravenous injection of glucose, found no difference in the results of tolerance tests between pregnant and non-pregnant women.

Basil-Jones (1949) stated that, from the evidence then available, the results of glucose tolerance tests in the pregnant differed from those in the non-pregnant state in

TABLE III.

The Blood Sugar Level One Hour after the Ingestion of 50 Grammes of Glucose during Pregnancy.

Month of Pregnancy.	Mean Blood Sugar Level at One Hour. ¹	Number of Observations.	Standard Deviation. ¹
2	133	12	26
3	131	70	29
4	127	125	30
5	129	144	26
6	130	145	28
7	129	144	26
8	128	137	25
9	126	107	24
10	123	59	26

¹ Milligrammes per 100 millilitres.

that the fasting blood sugar level was lower, the maximum blood sugar level was lower, and the curve returned to the fasting level more slowly. Jackson (1952) found slightly improved carbohydrate tolerance in women in the thirty-sixth week of pregnancy.

TABLE IV.

The Blood Sugar Level One and a Half Hours after the Ingestion of 50 Grammes of Glucose during Pregnancy.

Month of Pregnancy.	Mean Blood Sugar Level at One and a Half Hours. ¹	Number of Observations.	Standard Deviation. ¹
2	128	12	36
3	118	69	27
4	115	125	25
5	116	144	26
6	115	145	26
7	116	143	24
8	119	137	25
9	118	107	24
10	116	59	23

¹ In milligrammes per 100 millilitres.

We may conclude this section by stating that the information dealing with the blood sugar levels and glucose tolerance in pregnancy is confusing; but that later observers tend to believe that in normal women there is comparatively little change in the glucose tolerance during pregnancy.

TABLE V.

The Blood Sugar Level Two Hours after the Ingestion of 50 Grammes of Glucose during Pregnancy.

Month of Pregnancy.	Mean Blood Sugar Level at Two Hours. ¹	Number of Observations.	Standard Deviation. ¹
2	114	12	23
3	105	68	25
4	105	125	23
5	104	145	26
6	106	145	24
7	106	145	21
8	106	140	21
9	107	109	22
10	101	59	22

¹ In milligrammes per 100 millilitres.

Method.

This study was carried out in the out-patient departments of the Royal Hospital for Women, Paddington, New South Wales. Women in the early months of pregnancy were referred to us and the objects of the project were

explained to them. They were then invited to cooperate in it. The only selection used was to exclude some women whose families were so large, or who lived so far from the hospital, that frequent attendances would have been difficult for them. One hundred and fifty-eight women completed a sufficiently large number of tests to make study of them worth while. Of these, 23 were aged under twenty years at the last birthday, 78 were aged between twenty

TABLE VI.

The Blood Sugar Level Two and a Half Hours after the Ingestion of 50 Grammes of Glucose during Pregnancy.

Month of Pregnancy.	Mean Blood Sugar Level at Two and a Half Hours. ¹	Number of Observations.	Standard Deviation. ¹
2	92	12	30
3	92	70	21
4	91	125	22
5	91	144	21
6	95	145	22
7	92	146	21
8	93	139	26
9	96	108	21
10	90	59	18

¹ In milligrammes per 100 millilitres of blood.

and twenty-four years, 39 were aged between twenty-five and twenty-nine years, 12 were aged between thirty and thirty-four years, four were aged over thirty-five years, and the age of two is unknown. It is thought that the group of patients studied is representative of young pregnant Australian women.

TABLE VII.

The Blood Sugar Level Three Hours after the Ingestion of 50 Grammes of Glucose during Pregnancy.

Month of Pregnancy.	Mean Blood Sugar Level at Three Hours. ¹	Number of Observations.	Standard Deviation. ¹
2	83	12	29
3	85	70	17
4	83	124	18
5	81	145	17
6	83	144	19
7	82	146	18
8	83	138	23
9	84	109	16
10	82	59	16

¹ In milligrammes per 100 millilitres of blood.

The initial history included questions on age, parity, duration of pregnancy, family incidence of diabetes, and the birth weights of previous children. A general physical examination was especially directed at any endocrine abnormality. At the first interview, the patient was given an appointment for her first glucose tolerance test, without alteration to her daily dietary regimen in any way. After the first test, further glucose tolerance tests were performed at intervals of approximately four weeks.

For the tests, the patient had been fasting for twelve hours. After an initial blood sample had been taken, 50

grammes of glucose dissolved in water were drunk, and thereafter blood samples were taken at half-hourly intervals for three hours. Capillary blood was used, and the blood sugar was estimated by the method of Hagedorn and Jensen. The blood sugar estimations were carried out by graduate technicians. The standard error of an individual technician was determined to be about 3.5 milligrammes of glucose per 100 millilitres at the same levels of blood sugar, but there was some variation between individual observers as to the blood sugar level.

At the conclusion of the pregnancy in each patient, the pregnancy was reviewed to ensure that no known circumstances had occurred which could have altered carbohydrate tolerance during the period. It was not necessary to exclude any patient as a result of this review.

Results.

In Table I is given the mean blood sugar level at each month of pregnancy. At any month there is some variation about the mean, owing partly to variation between subjects and partly to difference among observers. It appears from the table that the mean fasting blood sugar level is quite constant over the months of pregnancy.

TABLE IX.

The Highest Blood Sugar Reading by Month of Pregnancy. (Milligrammes per 100 Millilitres of Blood.)

Month of Pregnancy.	Mean Highest Blood Sugar Level.	Number of Observations.	Standard Deviation.
2	148	12	25
3	142	70	26
4	139	126	27
5	140	145	25
6	139	145	24
7	139	146	22
8	139	138	24
9	137	111	19
10	139	57	24

We now give, in Tables II to VII, the means for the blood sugar levels at each month, for each half-hourly interval after the ingestion of 50 grammes of glucose.

Table II shows that the mean blood glucose level half an hour after the ingestion of glucose is constant over the months of pregnancy and is about 125 milligrammes of glucose per 100 millilitres of blood.

At one hour the mean blood sugar level is higher (about 130 milligrammes per 100 millilitres), but again the mean is practically constant over the months of pregnancy.

The dispersion about the mean is greater at half an hour and one hour after ingestion than for the fasting blood sugar level.

Tables IV to VII give the means and standard deviations of the blood sugar level one and a half hours, two hours, two and a half hours and three hours after ingestion.

This information is consolidated in Table VIII, where the means are given for each month of pregnancy and for each interval after ingestion. It should be noted that the means of the readings for a particular month may not

TABLE VIII.

The Mean Reading of Blood Sugar Level by Month of Pregnancy. (Milligrammes per 100 Millilitres of Blood.)

Month of Pregnancy.	Fasting.	Half an Hour.	One Hour.	One and a Half Hours.	Two Hours.	Two and a Half Hours.	Three Hours.
2	89	131	133	128	114	92	83
3	89	125	131	118	105	92	85
4	87	126	127	115	105	91	83
5	89	125	129	116	104	91	81
6	89	126	130	118	106	95	83
7	88	125	129	116	106	92	82
8	87	122	128	119	106	93	83
9	88	123	126	118	107	96	84
10	85	124	128	116	101	90	82

TABLE X.
The Frequencies of the Time of the Highest Reading by Month of Pregnancy.

Month of Pregnancy.	Total Observations.	Frequency of the Highest Reading: Time after Ingestion of Glucose.						
		Fasting.	Half an Hour.	One Hour.	One and a Half Hours.	Two Hours.	Two and a Half Hours.	Three Hours.
2	12	0	5	3	4	0	0	0
3	19	0	27	29	8	4	1	0
4	126	2	43	50	11	9	6	0
5	145	1	52	66	16	7	3	0
6	145	1	52	58	21	10	3	0
7	146	1	50	60	22	10	3	0
8	188	2	34	68	21	7	2	4
9	111	0	30	47	23	6	5	0
10	59	2	20	22	8	4	3	0
All months	951	9	318	403	134	57	26	4

approximate to the most common type of curve for that month.

The curve of the means for any month will tend to be flatter than the curve of individual glucose tolerance tests.

Another test of glucose tolerance is to consider the highest value attained by the blood sugar at any one glucose tolerance test.

TABLE XI.
The Difference in Blood Sugar Levels between the One-Hourly and Two-Hourly Readings.

Month of Pregnancy.	The Mean of the Difference between the One-Hourly and Two-Hourly Readings. ¹	Number of Observations.	Standard Deviation. ¹
2	19	12	12
3	25	68	24
4	23	126	30
5	27	144	26
6	24	145	24
7	23	145	25
8	23	138	24
9	19	106	23
10	26	57	29

¹ Milligrammes of glucose per 100 millilitres of blood.

Table IX shows that the mean of this highest value is also constant throughout pregnancy. Moreover, from Table X there appears to be no change in the timing of this maximum.

Another test of glucose tolerance is to measure the fall in the blood sugar level by subtracting the two-hour reading from the one-hour reading. This has been carried out to construct Table XI. Here again we find a surprising degree of constancy over the months of pregnancy.

Finally, in Table XII are given the times at which the blood sugar level first falls below 120 milligrammes per 100 millilitres of blood.

Discussion.

The conclusions of this inquiry can be drawn from the tables. It can be seen from a perusal of Tables I to VII that the mean blood sugar figures from glucose tolerance tests are constant throughout pregnancy. These conclusions are summarized in Table VIII, and it is apparent that the glucose tolerance as a whole undergoes no change as pregnancy advances. These findings strongly suggest that carbohydrate tolerance does not alter during pregnancy.

Hyperglycæmia did not occur, and the peak of the curve was recorded at the expected time. However, it can be seen from Table X that the peak occurred later than at the one-hour reading in 221 of the tests. As this constitutes nearly one-quarter of the tests performed, it may be that in some women pregnancy will cause a delay in the curve reaching its peak. As this effect is almost constant throughout pregnancy, we suggest that it probably is not important.

Although Table VIII shows that the means of the glucose tolerance curves were normal, reference to Table XII suggests that the return of the blood sugar level of pregnant women to within the fasting range is often delayed. The blood sugar reading was below 120 milligrammes by two hours or sooner in 676 tests, but it was delayed in 243 tests. In 10 tests no readings were below 120 milligrammes per 100 millilitres, and in one test the return to normal was not known. The delay in the fall of the blood sugar level to 120 milligrammes per 100 millilitres or lower gives support to the suggestion of Hurwitz and Jensen (1946) that, in pregnancy, the glucose tolerance test should be carried out over a period of three hours. It appears that this slight delay in return to normal is the sole feature in which this series differs from normals—that is, non-pregnant females of a comparable age.

TABLE XII.
Time of the First Blood Sugar Reading Below 120 Milligrammes per 100 Millilitres.

Month of Pregnancy.	Half an Hour.	One Hour.	One and a Half Hours.	Two Hours.	Two and a Half Hours.	Three Hours.	All.	Nil.	Unknown.	Total.
2	0	2	2	2	3	0	1	1	0	11
3	1	8	16	12	17	5	10	0	1	70
4	2	12	29	18	26	7	28	4	0	126
5	1	10	29	38	24	14	28	1	0	145
6	2	7	27	32	32	11	30	2	0	143
7	0	12	31	38	28	8	27	0	0	144
8	0	5	35	33	21	9	29	2	0	134
9	1	9	26	27	21	5	16	0	0	105
10	0	9	9	16	8	4	6	0	1	53
All months	7	74	204	216	180	63	175	10	2	931

Conclusions and Summary.

1. One hundred and fifty-eight pregnant women have been subjected to glucose tolerance tests at intervals throughout pregnancy. The results are presented with the following conclusions.

2. Carbohydrate metabolism as measured by the glucose tolerance test in pregnant women undergoes little change during pregnancy.

3. The fasting blood sugar level of pregnant women is within the normal range.

4. The peak of the glucose tolerance curve in pregnancy occurs at the anticipated time in most cases, but can be expected to be delayed in some women.

5. The fall of the curve to normal takes two hours in most cases, but is delayed beyond two hours in perhaps one-quarter of pregnant women.

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UNDERFEEDING IN INFANTS: A PLEA FOR EARLY INTRODUCTION OF SOLID FOODS.

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THE infant mortality rate in England and Wales during the greater part of the nineteenth century was about 150 per thousand live births. This high rate was mainly due to the prevalence of gastro-enteritis as a result of incorrect feeding, bad hygiene and poor management. At the beginning of the nineteenth century an analysis of the chemical composition of milk was made. This knowledge resulted in the publication of numerous complicated formulae, with the result that milk was prescribed with the same accuracy and precision as a dangerous drug (Wickes, 1953).

Infant mortality has undergone a steady reduction in the last fifty years, and this can be attributed partly to the introduction of child welfare clinics and to the increasing awareness of the necessity for good hygiene and adequate housing.

Overfeeding of infants has been repeatedly cited as the main cause of feeding troubles, but it is now generally acknowledged that overfeeding is largely a myth and practically never occurs (Illingworth, 1954).

In 1950 Britain was still subjected to severe food rationing, and it was a reasonable assumption that under-nutrition in infancy and childhood would not present as a common problem in Australia, where the adult caloric daily intake is nearly the highest in the world. It soon became evident that such a conclusion was erroneous, and that the availability of abundance of food does not necessarily mean an adequately fed infant population. On the contrary, in Queensland, underfeeding is a very frequent occurrence, both in hospital and in private paediatric practice. In fact, in England, an enlightened public and the distribution of supplementary foods at maternal and child welfare clinics contributed to a remarkable absence of dietetic deficiencies in the infant population.

In England it was rarely necessary to administer blood transfusion to infants suffering from severe malnutrition, whereas in Queensland such a procedure is not an unusual emergency.

This state of affairs can be attributed mainly to the following factors:

1. Failure to introduce solid foods at an early age, owing to incorrect advice and to the prevalent fear of overfeeding the baby. Mothers frequently assert that they are advised to administer "one drop of yolk of egg daily"—not sufficient for a self-respecting canary, and certainly totally inadequate for a lusty, six-months-old infant.

2. Incorrect parental attitude, with over-fussing and too much persuasion. The infant rejects these attempts to feed it forcibly, and the parents develop an anxiety neurosis following on their repeated failure to persuade the infant to take its food (Nelson, 1950).

3. Treating the infant as an interesting biological experiment, with constant analysis of attitudes and actions and over-emphasis on vitamins and supplementary food preparations.

Reports of Cases.

The following three cases selected at random are illustrative of the variable types of underfeeding commonly presented in Queensland.

CASE I.—A., a male, was an only child, aged two years. His birth was normal, and his birth weight was eight pounds. His weight on examination was 20 pounds (normal expected weight, approximately 30 pounds). His parents owned a large cattle property.

On examination, the patient was a pale, undernourished, peevish boy, constantly demanding his mother's attention. His diet at two years consisted of diluted milk, paw-paw, raw carrots, bread and butter, and an egg twice a week. He had been subjected to innumerable investigations and had a prolonged course of vitamin B₁₂. There was no evidence of organic disorder. The mother was very resistant to advice, but was finally persuaded to give him a mixed diet. She

steadfastly refused to give him meat, but agreed to incorporate fish and cheese in his daily diet. Within two months he gained weight and became more manageable, and according to his mother had undergone a "strange transformation".

CASE II.—B. was a female infant, aged ten months; her birth was normal and her birth weight was eight pounds 14 ounces. Her weight on examination was 15 pounds (normal expected weight, approximately 20 pounds). This infant's diet consisted of half-strength milk, orange juice and sieved vegetables. She was also given iron and liquid paraffin nightly for constipation. The latter was undoubtedly due to underfeeding. No doubt the liquid paraffin prevented the absorption of the fat-soluble vitamins. The mother had developed an acute anxiety neurosis, and the parents were quarrelling over the child's diet.

On examination, this child was an intelligent infant, but obviously undernourished. She had six teeth. There was no evidence of any organic disorder. The parents were most cooperative and agreed to give the child a mixed diet of eggs, fish, cereals, fruit, cheese and full-strength milk *et cetera*. Progress was immediate. Three months later her weight was 20 pounds and her general condition was excellent.



FIGURE I.

Case III: photograph of patient, aged three years.

CASE III.—C., a female aboriginal child, aged two years, was admitted to hospital on August 27, 1953, weighing fourteen pounds; her birth weight was unknown. There was a vague history of vomiting and loose stools for three months prior to her admission. She presented as a profoundly emaciated infant with gross evidence of severe malnutrition. She had extensive scabies and oral thrush. She lay completely inert and was unable to swallow her saliva. Pronounced alopecia was present. Examination of her heart, lungs, abdomen and central nervous system revealed no abnormalities.

She was given serum intravenously, 300 millilitres, alternating with 4% glucose solution and 1/5 normal saline. In addition, 100 milligrammes of vitamin B₁₂ were administered intramuscularly daily, and one cubic centimetre of liver extract was given intramuscularly twice a week. A continuous gastric drip administration of half-strength "Benger's Food" with vitamin supplements was instituted, and the thrush was treated by the local application of 1% silver nitrate solution.

On September 23 her condition underwent a sudden deterioration. Her temperature rose to 104.6° F., and multiple abscesses developed in her left leg. *Pseudomonas pyocyanus* was isolated from her left leg on culture; this organism was sensitive to streptomycin. X-ray examination revealed generalised decalcifications of the left femur, tibia and fibula, with transverse lines of density running across the shafts. This was attributed to multiple diet deficiency without typical signs of scurvy or rickets.

Streptomycin (20 milligrammes per pound of body weight in twenty-four hours at six-hourly intervals) was administered intramuscularly, and she was also given a blood transfusion followed by 4% glucose solution in 1/5 normal saline. After a very stormy passage, her condition resolved and she became afebrile on September 30.

Various investigations were carried out, with the following results. The response to the Kline test was negative. X-ray examination of the chest showed the lungs and heart to be normal, and no radiological abnormality was detected in the skull. Tests for fibrocystic disease of the pancreas gave negative results. Examination of the cerebro-spinal fluid revealed no cells, and a protein content of 10 milligrammes per 100 millilitres. No abnormalities were detected in the urine. Frequent examination of the stools revealed no ova, amoebae or cysts. No pathogens were isolated on culture. Rhabditiform larvae of strongyloides were present in the stools, a common finding in aboriginal children, and certainly not the cause of this child's condition.

On October 5 she began to take small quantities of food, but a considerable period elapsed before she could tolerate a mixed diet.

She is now a very healthy, active child, with a luxuriant growth of hair and a hearty appetite, due in no small measure to the infinite pains and diligent care of the nursing staff. Her present weight is 23 pounds. On investigation, it was revealed that she had been grossly neglected by her parents and deprived of essential food from birth.

Discussion.

There can be little doubt that there is a tendency to underfeed infants in Queensland, especially during the vital post-weaning period. There is a far too timorous approach to the introduction of solid foods, with the result that many infants' failure to thrive can be attributed solely to underfeeding.

If we are to ensure a satisfactory weight gain in our infant population, it seems crystal clear that we must reject the outmoded concepts prevalent in Queensland. We should rid ourselves of the notion that we may harm our infants by overfeeding them or introducing solid foods at an early age, and put into practice the world-wide accepted teaching that it is almost impossible to overfeed a healthy, normal infant.

We have marched a long way in the past fifty years; but, I submit, we should not fear to discard tradition and be prepared to review our concepts of infant feeding. Thus, and thus only, will we reduce infant morbidity.

Summary.

Brief references are made to the great reduction in infant mortality during the past fifty years. Emphasis is laid on the misconceptions regarding infant feeding, and a special plea is submitted for the eradication of well-worn pathways. Reasons are propounded why underfeeding is so prevalent in Queensland among the infant population. Illustrative cases are selected from a large number of similar records.

References.

- ILLINGWORTH, R. S. (1954), "Three Months Colic", *Arch. Dis. Child.*, 29: 165.
- NELSON, W. E., editor (1950), "Mitchell-Nelson Text-Book of Pediatrics", 5th Edition, Saunders, Figure 24, page 149.
- WICKES, I. G. (1953), "A History of Infant Feeding", *Arch. Dis. Child.*, 28: 495.

Reviews.

Galen of Pergamon. By George Sarton; 1954. Lawrence, Kansas: University of Kansas Press. 8 1/2" x 5 1/2". pp. 120. Price: \$2.50.

The third series of Logan Clendening Lectures on the History and Philosophy of Medicine were delivered in the University of Kansas by Dr. George Sarton, whose writings on the history of science are widely known. The two lectures were closely related in historical significance. The first dealt with the Alexandrian Renaissance; the second, which has now been published in the form of a small book, is a brilliant exposition of certain important aspects of the life and work of Galen, who typified all that was best in the famous school of Alexandria.

In the production of this valuable piece of research, Dr. Sarton has made full use of his sound scholarship in some of the ancient and modern languages, his wide scientific knowledge, and his long experience as historian and bibliographer. Much interesting new material is included in the chapters relating to Galen's Hellenistic background, to his attitude to the various medical sects of his day, to medical science and research methods, and to his own philosophy of religion. Galen is revealed to us here, not as an uncompromising medical theorist and temperamental crank, but as scholar, anatomist, experimental physiologist, physician, surgeon, pharmacist, philosopher, historian and philologist, as well as a gifted and prolific author. It is no wonder, then, that his fame and scientific authority remained unchallenged for nearly fourteen centuries.

In one chapter there is much detailed information on the subject of Galen's writings, their translation from the original Greek to Syriac, Arabic, Hebrew or Latin; then there is a list of those works which were thought worthy of publication by the early printers, and those more recently translated into English. Later on is an interesting discussion on Galen's personal character and style of writing, which, in the words of Dr. Sarton, "hang together, the latter being simply the literary aspect of the former".

The whole book is freely documented, and should prove a helpful contribution towards a better understanding of the most renowned and remarkable figure in medical history. It is the more pleasing to read by reason of the fact that the author does not hesitate to comment freely on the facts he has elicited, and is not afraid to interpolate his own interpretations of Galen's controversial character and scientific achievement.

A Synopsis of Obstetrics and Gynaecology. By Aleck W. Bourne, M.A., M.B., B.Ch. (Camb.), F.R.C.S. (England), F.R.C.O.G.; Eleventh Edition; 1954. Bristol: John Wright and Sons, Limited. 7½" x 5", pp. 544, with 170 text figures. Price: 25s.

The continued popularity of Dr. Bourne's synopsis is proved by the appearance of a fully revised and modernized eleventh edition. While books such as this have to be written primarily from an examination viewpoint, this work is one that will prove of practical assistance also in practice after graduation. All through the book more emphasis is placed on practical procedures rather than on the theory behind them and the salient points are clearly enumerated, which makes them readily assimilable.

The latest advances in the use of hormones, chemotherapeutic agents and antibiotics are included and the often vexed problems of dosage are simplified as far as possible; and while adequate details of the medical aspects of treatments are given, as would be expected, operative techniques are beyond the scope of the work, and are therefore not included.

The 536 pages contain an immense amount of concentrated subject matter and are illustrated by rather condensed drawings, which, however, fully portray their topics.

By listing the details of each entity in logical sequence the author saves the readers the labour of making notes and headings for themselves. However, no claim is made that a work of this type is all-sufficient, but rather, the author states, that the book "should serve as a useful supplement to, and not a substitute for, the ordinary textbooks, in order that the subjects may be quickly revised". Certainly, if used wisely, this book will prove a valuable ally for students.

Consider the Lilies. By Stuart Scougall and Franz Holford; 1953. Sydney: Ure Smith. 10½" x 7", pp. 91, with wood engravings by Eva Sandor. Published in a limited edition of 200 copies, 40 of which have been reserved for the medical profession. Price: £6 6s.

This book is a most unusual and fascinating production and a superb example of the printer's art. It describes the tree-garden at "Kepdowrie", Dr. Stuart Scougall's Georgian residence at Wahroonga, New South Wales. The garden is a memorial to Dr. Scougall's son who was killed in the first World War. In the introduction, Scougall's collaborator, Franz Holford, draws a distinction between gardens dependent on annuals and a woodland garden—the former is an ephemeral delight, but the latter is timeless. In the garden at "Kepdowrie" this timelessness is what concerns the beholder, for "we are about to contemplate something which has acquired a dignity, ease and unconstrained serenity largely through mellowing time". Holford writes that this garden "leads up from the world of sinew to the unregional spaces of the soul, and contrives to teach us on the way the

mystery of duty and the barely conscious, inexplicable wonder of destiny". Dr. Scougall describes the garden as consisting of several parts—Ash Grove, Formal Garden, Golden Elms, Beech Wood, and Green Court. He writes in an exalted and ecstatic fashion with obvious sincerity, but his meaning is not always clear. He refers to the difficulty which musicians may have in following simultaneously the separate melodic lines of a five-voice fugue, and adds that if in addition each voice is replaced by a polyphonic choir or full orchestra the task is increased in magnitude and attainable only to a sensitive few. He thinks that the same structure in the garden may be more readily followed, since the difference in the tempo renders the synthesis an easier task. In the garden there is "a roundel of the year moving many thousand times more slowly than the shadow on a sundial". In this *largo*, he declares that "the innumerable conferments make constant play. These voiceless polyphonies live their flooding song but once, and in memory reflect in echoes from the ecstatic chiselling of perception". He thinks that even with a full day's visit to the garden the formal structure and all the ephemeral graces of Nature and the atmosphere distinctive of a particular day may be seen, but never enough to recognize any fragment of continuity, still less the "five-fold weft". He continues: "But it lies open there as a goal of consummation for both the intellect and emotions, granting beatitude and a repose of indestructible embattlement against doubt along the grand march of consciousness". But this type of language notwithstanding, the reader is left with an impression of something graceful, stable and significant. Several poems in rhyming and blank verse are included. The illustrations by Eva Sandor are of superb quality; they are the fruit of a sympathetic and lively imagination. To many readers the last in the book will specially appeal; it appears under the final words:

Then it rained in the desert of my heart,
And I went on my way unlonely yet alone.

Diseases Affecting the Vulva. By Elizabeth Hunt, B.A., M.D., Ch.B. (Liverpool); Fourth Edition; 1954. London: Henry Kimpton. 10" x 6½", pp. 236, with 64 illustrations, 17 in colour. Price: 31s. 6d.

In general the fourth edition of this book is similar to previous editions. Minor additions have been made to bring it up to date, including a statement on the treatment of thrombophlebitis with anticoagulants and a warning on the use of antibiotics as a frequent source of troublesome dermatitis. There is a new chapter on *herpes gestationis* which very adequately handles all aspects of this uncommon condition. Lichen sclerosis and leucoplakia are now satisfactorily discussed in detail as separate conditions. The book will continue to be of value to both gynecologists and dermatologists.

The Public Health Inspector's Handbook (Formerly The Sanitary Inspector's Handbook): A Manual for Public Health Officers. By Henry H. Clay, F.R.San.I., F.I.S.E., assisted by Ronald Williams, O.B.E., D.P.A., F.R.San.I.; Eighth Edition; 1954. London: H. K. Lewis and Company, Limited. 8½" x 6", pp. 628, with 101 illustrations. Price: 30s.

EVEN in these days, when public health has long passed from the old-time "drains and stinks" phase, and has begun to concentrate on the problems of human ecology in a wider way, there is still an important place for the well-trained sanitary inspector. Well-born though it is, the title "sanitary inspector" is now largely cast aside and "public health inspector" takes its place. Whatever his title, the post of health inspector is one of high value in society, and it demands knowledge and alertness, tact and personality.

A revision or reprint of "Clay" has appeared about every two years since the first edition in 1933. The present is the eighth edition. Henry Clay is on the staff of the Army School of Hygiene; he formerly lectured at the London School of Hygiene and Tropical Medicine, and examined for various other educational bodies. The birth of the new book has been assisted by Ronald Williams, Chief Sanitary Inspector at Coventry, England. Williams holds a high place in his field; he worked with Parry, of Bristol, for many years, and he is active in the work of the Royal Sanitary Institute and of the Central Council for Health Education. Clay and Williams have long proved their qualifications for authorship.

And the book—it will hold the place of the constant working reference book for public health inspectors throughout the British countries. It is well illustrated, and the

text is clearly and logically set out. Particularly useful are those sections dealing with procedures in investigations. The method of presentation generally aims at what to look for, rather than what is theoretically desirable. Rarely do we find theory taught in a manner so applicable in practice.

About half of the book is devoted to the legislation administered by inspectors. This is as it should be. The law defines the scope of an inspector's work, and he must know what to do at all times. British legislation, however, differs from our own in many respects, and in consequence much of the book is valueless for use here. Similarly, some of the building and plumbing practices dealt with are not used here.

Notwithstanding those comments, the book is an essential for every health officer's library.

Porphyria: Their Biological and Chemical Importance. By A. Vannotti, translated by C. Rimington, M.A., Ph.D., D.Sc., F.R.S.; 1954. London: Hilger and Watts, Limited, Hilger Division. 8½" x 5½", pp. 282, with 44 illustrations. Price: 50s.

There are fundamental relationships between porphyrin compounds and the life of cells in normal and pathological conditions. Very much has been written about these relationships, but while there are excellent books on the chemistry of porphyrins, the clinical aspects of the porphyrins have not been brought together in English. Rimington's translation of the book in French by A. Vannotti seeks to fill this want.

The chemistry of the porphyrins is treated briefly but adequately for most readers. There is a long section on the physico-chemical characteristics of the porphyrins which is much too detailed for anyone other than a laboratory worker particularly interested in the subject. The methods in use for the extraction of porphyrins from urine are dealt with at length. After a good account of the distribution of porphyrins in nature the greater part of the book is taken up with a detailed account of the physiology and pathology of the porphyrins in man. About two-thirds of the book is concerned with porphyrins in relation to pathological conditions. It is obvious that the author is an enthusiast in the study of abnormal porphyrin metabolism, and it is not always easy to determine whether a particular statement is an account of observed conditions or is theory based on somewhat slender evidence. All the clinical conditions which have been associated with disturbed porphyrin metabolism are discussed at length with detailed descriptions of clinical cases. The book will be very useful to any medical man who wants to know under what conditions abnormal porphyrin metabolism takes place, but some judgement must be used in accepting the author's claims.

Of Publishing Scientific Papers. By George E. Burch, M.D., F.A.C.P.; 1954. New York: Grune and Stratton. 10" x 8½", pp. 40, with 18 illustrations. Price: \$2.75.

This brief essay was presented as the presidential address at the meeting of the Central Society for Clinical Research on October 30, 1953, in Chicago. It offers in pithy fashion advice to the writers of scientific papers, to editors, editorial boards and publishers, and to readers and critics. The substance of the comments, which are admirably expressed, will be approved by most people with experience in the field of scientific writing. The essay is freely illustrated with delightful black and white drawings, which drive the main points home and add greatly to the attractiveness of the book. It will do much good if it is read humbly by the right people.

Canadian Medical Directory. Edited by W. R. Feasby, M.D.; First Edition; 1955. Toronto: Current Publications, Limited. 9" x 6½", pp. 384. Price: \$7.00.

We welcome the appearance of the first "Canadian Medical Directory" and congratulate the editor, Dr. W. R. Feasby, on the whole production. We also congratulate him on "the very great measure of co-operation" which he has received from members of the medical profession. The alphabetical list of members of the profession occupies the greater part of the volume and is clearly set, with the names in prominent black type. The gazetteer section is set on blue paper—the practitioners are listed according to the provinces and the towns in which they practise. The section containing general information is on buff coloured paper and contains information on government departments, medical organizations of various kinds and universities. Australian practitioners will be interested to know that Canada has no less than 12 universities with faculties of medicine. This is a book which will be indispensable to medical libraries and other medical organizations in this country.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Antisera, Toxoids, Vaccines and Tuberculin in Prophylaxis and Treatment", by H. J. Parish, M.D., F.R.C.P.E., D.P.H.; Third Edition; 1954. Edinburgh and London: E. and S. Livingstone, Limited. 9" x 6", pp. 238, with 33 illustrations. Price: 21s.

The aim is to present the essential principles of immunology and their practical application in human medicine.

"Medicine Magic and Mythology", by John Precope; 1954. London: William Heinemann (Medical Books), Limited. 9" x 6½", pp. 284, with 22 illustrations. Price: 42s.

Deals with the evolution of pre-Hippocratic medicine.

"The Year Book of Pediatrics (1954-1955 Year Book Series)", edited by Sydney S. Gellis, M.D., and Isaac A. Abt, M.D.; 1954. 8" x 5½", pp. 432, with 113 illustrations. Price: \$6.00.

One of the Practical Medicine Series of Year Books.

"Modern Occupational Medicine", edited by A. J. Fleming, M.Sc., M.D., C. A. D'Alonzo, M.D., F.A.C.P., and J. A. Zapp, Ph.D.; 1954. Philadelphia: Lea and Febiger. Sydney: Angus and Robertson, Limited. 9½" x 6", pp. 414, with 44 illustrations, one in colour. Price: £5 7s. 6d.

The volume has been prepared in order to promote "a better understanding of the general principles and methods of industrial preventive medicine".

"Urology", edited by Meredith Campbell, M.S., M.D., F.A.C.S., with the collaboration of fifty-one contributing authorities; 1954. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. In three volumes. 10" x 6½", pp. 2590, with 114½ illustrations. Price: £28 10s.

The work is presented in 18 sections, each of which contains several chapters. The editor claims that many of the contributions are classical monographs.

"Brain Mechanisms and Consciousness: A Symposium Organized by the Council for International Organizations of Medical Sciences. Established under the Joint Auspices of UNESCO and WHO"; consulting editors, Edgar D. Adrian (U.K.), Frederic Bremer (Belgium) and Herbert H. Jasper (Canada), editor for the Council, J. F. Delafresnaye, C.I.O.M.S. (Paris); 1954. Oxford: Blackwell Scientific Publications. 9" x 6", pp. 572, with 114 illustrations. Price: 42s.

The symposium was held at Sainte Marguerite, Quebec, Canada, in August, 1953.

"Time Distortion in Hypnosis: An Experimental and Clinical Investigation", by Linn F. Cooper, M.D., and Milton H. Erickson, M.A., M.D., with a foreword by Harold Rosen, M.D.; 1954. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson, Limited. 9" x 6½", pp. 200, with eight type figures. Price: 43s.

The concept of time distortion as defined by the author is considered in its non-therapeutic implications and the clinical phenomena involved are discussed and studied.

"The Year Book of Obstetrics and Gynecology (1954-1955 Year Book Series)", edited by J. P. Greenhill, B.S., M.D., F.A.C.S.; 1954. Chicago: The Year Book Publishers, Incorporated. 8" x 5½", pp. 544, with 83 illustrations. Price: \$6.00.

One of the Practical Medicine Series of Year Books.

"Renal Function: Transactions of the Fifth Conference, October 14, 15 and 16, 1953, Princeton, N.J.", edited by Stanley E. Bradley, M.D.; 1954. New York: Josiah Macy Junior Foundation. 9½" x 6½", pp. 218, with 47 illustrations. Price: \$3.75.

The subjects discussed were: the nephrotic syndrome, the problem of kidney transplantation and acute renal failure.

The Medical Journal of Australia

SATURDAY, FEBRUARY 5, 1955.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of the article. The abbreviations used for the titles of journals are those adopted by the Quarterly Cumulative Index Medicus. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

REPORT OF THE BRITISH MINISTRY OF HEALTH.

ONCE more we have to record the publication of the report of the Ministry of Health of Great Britain. The report, which was presented by the Minister of Health to Parliament by command of Her Majesty in November, 1954, deals with the year ended December 31, 1953. As usual, it appears in two parts. Part I deals with the National Health Service and includes a chapter on international health, and also with welfare, food and drugs, and civil defence. Part II will comprise the annual report of the Chief Medical Officer for the same period. On this occasion the departmental report takes on an added significance, because the Minister for Health in the foreword refers to the progress of events in the sphere of health in the last five years. He describes the undertaking as a formidable one, but adds that the initial problems of the National Health Service were tackled with spirit and with the loyal and united efforts of all concerned. "There is indeed much to do, but there are solid achievements to record." He refers first of all to the hospital field, in which nearly 3000 hospitals of varying size, standards and traditions were taken over, and the major task was that of upgrading them so that hospitals which for various reasons were less well founded could be brought to the necessary standard of treatment, accommodation and equipment. During the first five and a half-years of the service, the greater part of £45,000,000 of capital expenditure was devoted to modernization, extension and reequipping of hospitals, and above all, to the provision of new and improved services. The equivalent of many new hospitals have been set up and some 40,000 new beds have been provided. More than half a million more in-patients were cared for in 1953 than in 1949. In out-patient consultative clinics, the number of new patients seen rose over the same period by 600,000, or 10%. There was also a substantial increase in the number of patients visited by specialists in their own homes. Improvements have taken place in the number of whole-time and part-time members

of nursing staffs, but there is still need for a steady entry of recruits into the nursing profession. This is essential for the maintenance of the expanded services and for the improvement of the services in mental and mental deficiency hospitals. By the end of 1953, approximately 97% of the people of England and Wales had their names on the lists of general practitioners. The number of principals giving service and the amount and method of their remuneration have been substantially improved. The average number of patients on a doctor's list has been reduced. At the same time, there has been a considerable improvement in the distribution of general practitioners, and the number of areas in which the number of doctors is regarded as adequate has increased. The Minister states that the different parts of the service and their relative importance are beginning to be viewed in the proper perspective. One of the first tasks was to place at the service of the patient in his home a coordinated team acting under uniform clinical direction. The general practitioner, in the opinion of the Minister, is beginning to be seen and accepted, as he should be, as the clinical leader of the domiciliary team. A further task, which has not yet advanced very far, is the development of the preventive and after-care services, in which the participation of all services of the domiciliary team is also essential. The medical officer of health has a vitally important role to play. Only by the spread of the conception of team work will it be possible, the Minister declares, for the services to the patient in his home to develop their full potentiality and reduce the present demand for institutional treatment. The Minister describes voluntary effort as an invaluable contribution. Voluntary effort, he thinks, can be developed in services for the sick, for the old people and for the handicapped, not only within the hospital service, particularly mental hospitals, but also in the sphere of services provided by local authorities for the patient in his own home. Of course, the cost of all this is enormous. The Minister states: "With an actual total cost of £486,000,000 and an actual net cost to the Exchequer of £384,000,000 in 1952-53, the National Health Service in England and Wales accounts for no mean percentage of the national budget."

The first section of Part I of the report dealing with the National Health Service is divided into 14 chapters, and covers 175 pages. It is obviously impossible to give anything like an adequate idea of the ground covered by this report; attention will be drawn to only one or two of the more prominent features. The structure of general practice is discussed at some length. During 1953, the number of practitioners admitted to medical lists was 1568 as against 1100 in the previous year. Of the newly admitted practitioners, about two-thirds were doctors entering established partnerships. About 45% of practices are now run on a partnership basis. The names of 729 doctors were deleted from the lists on account of deaths or retirement. The net increase on the lists was therefore 839 compared with a yearly net increase of some 300 in the early years of the service. The total number of principals giving unrestricted medical service on lists on July 1, 1953, was 18,010, and of these, some 26% were taking part in partnerships of larger sizes. The total number of single-handed practices is becoming smaller,

and it is stated that entry into general practice in the future will predominantly tend to be by way of assistantship in a firm of partners. Not unnaturally, members of a partnership prefer to "try out" a new man before making him a member of the firm. Apparently, some difficulty occurs when practitioners wish to obtain a single-handed vacancy in general practice. Some of those experiencing difficulty may be "too senior" or may be those whose "personal commitments" are too heavy to allow acceptance of a post as an assistant. It has also been argued that established practitioners might be unwilling to take as assistants or partners doctors whose qualifications are higher than their own. Some areas in the country are much more sought after than others. If a line is drawn between Hull and Gloucester, the areas to the south are much preferred to the areas north of this line. During the year, some 891 assistants changed or left their posts, and of these, more than one-third were thirty years of age or under and had been occupying their posts for less than two years. Nearly one-fifth were also thirty years of age or under, but had been in their posts for more than two years, and most of the remainder, or just over one-third of the total, were between the ages of thirty-one and forty-five years. There has been a reduction by half in the number of assistants aged between forty-six and fifty-five years and of about one-third in those aged thirty-six to forty-five years. A total of 798 assistants took up their posts during the year ended July 1, 1953, and these represented a rise of 53% compared with the number who took a post during the preceding year. It is clear, we are told, from the information supplied by the Medical Practices Committee, that the majority of the 891 assistants who left their posts during the year had been taken into partnership and were not merely changing from one post to another. These changes are held to indicate that the grade of assistant is now more of a training grade as a preliminary to becoming a principal than it has been in the past. It is the considered view amongst most doctors that a period spent as an assistant provides the best introduction to general practice for a young doctor. The age distribution of general practitioners is discussed, and it is shown that there has been a net increase of practitioners in the younger age groups, as was to be expected. There has, however, been a decline in the number aged over fifty-five years. It is thought that this decline may be associated with the possibility of claiming certain benefits under the superannuation scheme on completion of five years' work under the service.

Some interesting figures are given in regard to pharmaceutical services. During the year, 219,756,904 prescriptions were dispensed by pharmacists, an increase of nearly 4,000,000 on 1952, and 17,750,000 on 1949. The total cost of these prescriptions was £44,700,965 (an average cost of 48.82 pence), compared with the 1952 cost of £43,768,599 (average 48.63 pence) and the 1949 cost of £30,331,303 (average 36.04 pence). For the first few months in 1953 (from August to November) for the first time since the start of the service, the average cost per prescription was lower than for the corresponding month of the previous year, and this reduction is "attributed mainly to the cooperation of practitioners in accepting the advice of the joint committee on prescribing".

Disciplinary action was taken in certain cases. In 1953 the number of alleged breaches by practitioners of their terms of service considered by service committees and reported to the Minister by executive councils was 1628. Of these, 449 related to the general medical services and 539 to the general dental services, 588 related to the pharmaceutical services, and 52 to the supplementary ophthalmic services. In 757 cases the executive council recommended that no action should be taken, mainly because the complaint against the practitioner had not been substantiated. In 343 cases the council recommended that a warning should be given to the practitioner. Appropriate action was taken in other cases, and in 363 this included the withholding of a sum of money from the practitioner's remuneration. The number of cases of disciplinary action was very similar to that of the previous year.

On the preventive medicine side, one or two interesting facts may be recorded. All local health authorities provide B.C.G. vaccination for those who are known to have been in contact with tuberculosis, and up to the end of 1952 a total of 93,600 persons had been vaccinated with B.C.G. Included in this figure were nurses and medical students who were vaccinated through the hospitals' services as being liable to special risk of infection. Many local authorities report that the virtual disappearance of diphtheria tends to make patients careless and hard to convince about the value of immunization. There is general agreement that continuous propaganda is essential in order to secure the maintenance of a proper level of immunization among the child population, and especially among babies before the first birthday. The number of children immunized in 1953 was 521,887 compared with 561,858 in 1952. The medical officer of the London County Council, in criticizing the general apathy about immunization of children, suggests that "determined efforts must be made by increased publicity and personal approach to increase the percentage of children immunized if an increase in the incidence of diphtheria is to be prevented". It is to be noted that some authorities have introduced mobile immunization clinics and that these have met with a considerable degree of success.

In its issue for January 1, 1955, *The Lancet* discusses the report of the Ministry of Health for 1953 and points out that how the experiment turns out will depend largely on what doctors think and do about it. It must be remembered that *The Lancet* is published in a country where the medical profession has been organized into a national health service—in other words, where its practitioners have lost a great deal of the freedom which practitioners in Australia enjoy. There is truth in the statement made by *The Lancet* that every time that one of us—either out of irritation or in earnest—talks of a "State doctor" or a "State patient" he brings nearer the day when doctors and patients may be just that. In the same issue of *The Lancet* there appear some posthumous papers by the late Sir James Spence, who became known to many Australian practitioners at the time of the Australasian Medical Congress (British Medical Association) at Perth in 1948. Spence saw a danger in the increasing size of institutions such as hospitals. He thought that a big hospital with doctors who did not know each other was liable to lose its

status as an institution and become only the sort of service whose personnel were merely performing duties instead of being concerned together in their chosen tasks. Australian practitioners of medicine do well to consider the views of such men as Spence and the facts that have been set out in the report of the Ministry of Health. There is no doubt that *The Lancet* is right, that the result of the National Health Service experiment in England will depend largely on what doctors think and do about it. If this is true of England, it is equally true of Australia. It should be much simpler for Australian practitioners to think and to do the right thing about their national health scheme than it is for practitioners in England who have lost a great deal of their freedom. We know from reports on general practice which have appeared in England that many general practitioners in that country are doing first-class work, and it is probably true that there are some who are engaged in time service only. In Australia we need to cherish and safeguard what we have won. The state of affairs might have been very different, and we should never forget this. The attitude of mind should not be one of complacency, but of determination to make our service one of undeniable worth and first-class quality.

Current Comment.

NOCTURNAL CRAMPS IN THE LEGS.

MANY persons, particularly those over fifty years of age, have had experience of cramps which come on suddenly in the legs during the night. These cramps are extremely painful and the remedy usually adopted is for the patient to get up, out of bed and walk about. This is sometimes effective, but the relief does not always last very long. Some persons suffer from them so regularly that they take walking exercise every night before they go to bed. W. R. Lane, junior,¹ has discussed the treatment of these cramps and entitled his article "A Boon to the Aged". If his remedy is effective, it is indeed a boon to the sufferer whether he is aged or not. The remedy which he uses is "Orthoxine" hydrochloride. This is a proprietary name given by the firm of Upjohn in the United States of America to the drug known as methoxyphenamine hydrochloride. The full name of this drug is β -(*o*-Methoxyphenyl) isopropylmethylamine hydrochloride. According to Martindale, the drug is a white, odourless, crystalline powder with a bitter taste. It is soluble in water, alcohol and chloroform. It is used to produce bronchodilatation and inhibition of smooth muscles. Martindale writes that its pressor activity is considerably less than that of ephedrine or adrenaline, and in the usual doses it produces no alteration in blood pressure and only slight cardiac stimulation. It may be used for the relief of asthma, especially in patients intolerant of ephedrine, and is also effective in allergic rhinitis and acute urticaria. Lane writes that "Orthoxine" has frequently been noted to cause a flushing or blushing reaction, particularly in children. This has sometimes been so striking that parents have become alarmed about it. It is with this "side reaction", as Lane calls it, that he is concerned in his report. Lane states that the cause of the nocturnal cramp is apparently sclerosis and partial occlusion of some of the arterioles with or without generalized arteriosclerosis. When the patient relaxes and sleeps, the physiological fall of blood pressure deprives some areas of adequate circulation. Walking or mild exercise stimulates the flow of blood through the ischaemic part and relieves the pain. He

believes that signs of arteriosclerosis are almost always evident somewhere in the body. He finds that cold weather, abrupt change in the weather, dampness and exposure are apt to aggravate the condition.

Lane has used "Orthoxine" in the treatment of 200 patients with leg cramps, ranging in age from fifty-five to eighty-seven years. All had tried remedies of different kinds without relief. Most of the patients were under treatment for other diseases. He found that a dose of 100 milligrammes of the drug given at bed time brought complete relief to 196 patients. Three patients required an additional dose of 100 milligrammes after four to six hours to prevent recurrence of cramps. Only one patient experienced an untoward reaction; he manifested excitation and restlessness following administration of the usual dose, but he responded without undue stimulation of psychomotor areas when the dose was decreased to 50 milligrammes. At no time was incompatibility with other medications noted. The patients continued their treatment for other conditions and felt better because their rest was undisturbed. Some of the patients believed that the "Orthoxine" was a "sleeping medicine" as it enabled them to rest, though no sedative was given. Most of the patients were able to manage during warm weather without taking the drug, but promptly resumed treatment when cold weather started.

This report is most interesting, and the fact that peripheral dilatation of blood vessels is caused leads Lane to suggest that "Orthoxine" has a protective value against cerebral and coronary thromboses. Several of the patients in his series discontinued the therapy and subsequently suffered from cerebral hemorrhage. This, of course, does not really prove anything, but the idea is worth consideration. It is interesting to note that some patients felt so much better while they were receiving the drug that they stopped taking it, not realizing that their pathological circulatory condition remained essentially unchanged, though a functional improvement had occurred.

MONGOLISM.

THE family doctor usually finds it difficult to answer the parents' sad questions when a mongol child is born. He cannot answer his own satisfactorily. Probably he accepts it as a fact that mongolism is related to the age of the mother, and the available knowledge supports this view; but there are obviously other factors involved. Many of these have been set out in an erudite but readable paper by L. S. Penrose, Galton Professor of Eugenics in University College, London.² Although this paper contains the frank admission that the cause of mongolism remains a mystery, the data and opinions presented will repay careful reading. Surveys have shown that mongolism is surprisingly common in European populations, occurring in about one birth per 600. It is less generally known that it also occurs in African, Indian, Chinese and Japanese populations, although more rarely than in European populations. Professor Penrose makes no mention of what the condition is called when it occurs in a child of true Mongolian origin; the diagnosis would, of course, depend upon the "non-mongoloid" features. In any case the mongoloid facies is probably of lesser importance in the diagnosis, as even in the European child a mongoloid appearance does not necessarily imply mongolism in its usual sense of mongolian idiocy. Commenting on a recent report relating to an English girl of mongoloid appearance and normal intelligence, the editor of "The Year Book of Pediatrics"³ writes:

It is obvious that there is more to the characteristic facies of a mongoloid than slanting eyes and epicanthal folds, but it is extremely difficult to describe with any degree of success the facial features which constitute the syndrome.

¹ *Lancet*, September 11, 1954.

² "The Year Book of Pediatrics (1954-1955 Year Book Series)", page 372.

³ *J. Am. Geriatrics Soc.*, November, 1954.

The use of some term other than mongolism or mongolian idiole seems desirable, but no alternatives have been suggested and the term is firmly entrenched. This situation may be accounted for, not only by the mongoloid appearance *per se*, but by the fact that earlier investigators, speculating on the aetiology, put forward the idea that the condition was actually related to Mongolian ancestry. According to H. A. Skinner,³ about 1865 Langdon Down pointed out some curious ethnological resemblances in certain groups of idiots and proposed a classification into Caucasian, Ethiopian, Malayan and Mongolian types. Of these, only the term "mongolian idiot" has persisted. R. R. Gates has the following interesting note:⁴

Crookshank's *Mongol in Our Midst* was presented with such literary skill that it popularized the idea that Mongolism resulted from crosses during the Mongolian invasions of Europe and led to the survival of this notion. Further study of the condition renders this idea quite indefensible, but the name "mongoloid" will probably be retained for the condition. It is, however, probably a mutation, with recessive inheritance like many other abnormalities.

Penrose points out that the only aetiological fact concerning mongolism which has hitherto stood out clearly and consistently in all carefully conducted inquiries is the one to which we have already referred—the relationship to maternal age. He states that between the ages of twenty and thirty years the risk is rather less than one in two thousand; but thereafter, in each quinquennium, the risk for the mother is nearly three times that in the preceding period. It is uncertain whether or not the risk is increased in the age group below twenty years. Paternal age and order of birth seem to be of no significance. The significance of maternal health has not been completely settled, but the causal factor associated with maternal age is probably not strictly pathological but a physiological or hormonal change, or at least a subclinical condition. Another well-known fact is that in all cases yet reported, and there have been a good many, mongolism in monozygotic twins has affected both. On the other hand, among dizygotic twins, one normal twin with one affected is a relatively common occurrence. Penrose comments that, taken by itself, the twin evidence strongly suggests that the genotype of the fetus is an important aetiological factor—that is, one fetus is susceptible when another is not to the precipitating causes other than those connected with maternal age. Opinions differ on the question of familial incidence, but Penrose, after quoting various relevant reports, states that the inference can hardly be avoided that mongolism does show a genuine tendency to familial concentration in spite of the fact that the vast majority of cases give no indication of this trend. The combined evidence of the data from maternal age and familial incidence suggests the conclusion that some mothers, by virtue of inherited disposition, are especially likely to have affected offspring. The increased susceptibility is expressed by a partial suspension of the defensive effect of young maternal age which is normally present. A curious feature of this increased maternal susceptibility is that it appears to have something in common with fetal susceptibility to mongolism. A similarity in constitution between mother and fetus with respect to some inherited trait or traits apparently causes a predisposition to mongolism in the child.

Penrose presents a great deal more on the genetic background of the subject in his paper, but makes it clear that the evaluation of this information and its compression into a concise statement are difficult. To some extent, he states, the main inferences to be drawn are negative—that is to say, many plausible hypotheses can be excluded: "If the cause is believed to be genes it is clear that they can only be part causes, laying down a foundation of susceptibility to an unknown environmental influence." Penrose rejects any simple Mendelian explanation, insisting that the cause must be of the dual type—predisposing genic configuration plus precipitating environmental circumstances.

Discussing the aspect of maternal and foetal interaction, he states that the evidence indicates strongly that the maternal genotype is an important factor in causation. It also encourages the hypothesis that the predisposition in the mother and in the fetus is due to the same, or partly the same, genic constitution. Speculation requires caution, but recent experiments on the effects of environment in producing abnormal offspring point towards possible mechanisms which may be reasonably considered. It has been shown that susceptibility depends both on maternal and on foetal genotype, and that malformations can occur in the offspring of, for example, rats, when the maternal level of specific substances such as riboflavin drops below a critical point. Penrose offers the suppositions, first, that some substance, *x*, is required for foetal growth at a very early stage, and that the requirements of the fetus vary according to its own genetical constitution. The mother's requirements may be similarly supposed to vary, both with her genetical constitution and with her age. Other purely environmental factors may also be concerned. The analogy is then suggested of an infant in a certain tribe whose nutrition depends upon his ability to pick a certain kind of fruit from a tree. To do this, the mother has to carry the infant on her shoulder. The fruit is specially needed just at one brief period of the child's development. If the mother is too short, her infants may have difficulty in reaching the fruit, which, of course, contains substance *x*, and she may become shorter as she grows older. The baby's stature, which will be genetically related to his mother's stature, will also be important and, among equally tall mothers, critical. A pair of monozygotic twins, one on each shoulder, will be equally likely to obtain some substance *x* or to fail to get it. The converse hypothesis is also tenable. The absence of some metabolic capacity both in mother and fetus, the result of hereditary constitution, can result in the accumulation of some unused toxic metabolite. This may be harmful only in certain early stages of development. None of these factors by itself may be considered abnormal, but the concatenation of causal factors produces abnormality. Thus, in the case of mongolism, a concatenation of maternal and foetal genotype in certain environments, usually non-pathogenic but perhaps occasionally reinforced by abnormal circumstances or disease, may cause foetal growth to be disturbed in a special way. The substance *x*, of which there is a deficit or excess, in such conditions could be a growth-promoting (or retarding) hormone or vitamin.

This is, of course, largely speculation, but it provides a kind of tentative synthesis of what is known and what may be reasonably inferred and suggests further research that might be productive. As Penrose points out, the precipitating environmental influences, which may be nutritional or hormonal, require intensive investigation. A systematic quantitative examination of the mothers of mongols and controls at the same ages for hormone activity of all sorts might be very helpful.

THE SURGICAL CURE OF AN INFECTION TWO CENTURIES AGO.

AN interesting account of the cure of an infection following blood letting at the time when Louis XIV, *le roi soleil*, was on the throne of France is given by A. Jobard,¹ who relates an incident in the life of a French nobleman. The story concerns Louis de Rouvroy, Duc de Saint-Simon (1675 to 1755), one of France's most outstanding writers of memoirs. While in Paris on one occasion, Saint-Simon decided to have some blood taken, because "he felt the pressure of blood in his head". He consulted Le Dran, a well-known surgeon, who performed this slight operation, a common enough one at that time. During the night Saint-Simon felt pain in his arm; Le Dran had assured him that pain could occur only if the ligature had been too tight. Within two days the arm had swollen so much

³ "The Origin of Medical Terms", Williams and Wilkins, 1949, page 188.

⁴ "Human Genetics", Macmillan, 1946, page 1112.

¹ *Presse méd.*, October 9, 1954.

that it was larger than the patient's high, and he was in great pain and had a high fever. Compresses applied for two days produced no improvement. At that stage de Lauzun, Saint-Simon's brother-in-law, advised him to call in Maréchal, chief surgeon to the king. This proposal was attended with some difficulties, since Maréchal, under the terms of his appointment, was not supposed to leave Versailles. De Lauzun undertook to request from the king permission for Maréchal to come to Paris. Louis, although he had no love for Saint-Simon, authorized his chief surgeon not only to go to Paris, but to remain with his patient overnight.

By this time the infection had become generalized and the patient was having rigors. On his arrival Maréchal made an incision and opened the arm down its whole length. During the operation Saint-Simon, out of generosity and not wishing to hurt Le Dran, had himself bled by him. (Jobard remarks that nowadays he would have been given a blood transfusion.) Maréchal stayed for two days with his patient, then visited him once a day for a time, and finally saw him once every two days. The king's chief surgeon practised continuous extension long before it had been invented; he had weights applied to Saint-Simon's arm, which healed rapidly with a smooth scar and with no sign of contracture. The patient himself described the final result as follows: "My arm retained its normal length and I have had no pain from it since." He was grateful to Maréchal, and before long he had further cause for gratitude; the surgeon, with the aid of the minister Chamillart, succeeded in restoring Saint-Simon to the king's favour. This was quite an achievement, for Saint-Simon in his writings never lost an opportunity of disparaging his sovereign. Although he had had to remain away from Versailles, he had always been intensely interested in what went on there, and he has handed down an incredible amount of information on the subject, obtained through a collection of agents ranging from nobles to servants. Concluding his account of this clinical history, Jobard calls attention to the high sense of professional responsibility, the surgical skill and the excellent post-operative care manifested by surgeons of the day. Even now, he believes, it would be difficult with all the resources at our disposal to do better in the treatment of phlegmonous cellulitis of the arm than did Maréchal, chief surgeon of *le roi soleil*.

GASTRIC ULCER, "ROBADEN" AND CABBAGE JUICE.

THE use of cabbage juice in the treatment of gastric ulcer has received some publicity in the popular Press and an impression has been given that its effectiveness has been demonstrated. This receives no more than the most guarded support from a recent report by Richard Doll and Frank Pygott,¹ who treated patients suffering from gastric ulcer with cabbage juice and with a tissue extract known as "Robaden". The first trials were conducted on in-patients, due regard being paid to the fact that a faster rate of healing has been obtained with treatment in bed as an in-patient than with ambulant treatment as an out-patient. All the patients were put to bed and given a standard "basic" gastric diet. Appropriate investigations were carried out during the first week, and at the end of a week the patient's condition was assessed. Patients in whom the ulcer was healed or almost healed (the area of the niche in profile being less than 10 square millimetres) or in whom operation was indicated on account of the severity of the symptoms or suspicion of a malignant lesion were excluded from the trial. The remainder were then allotted at random to groups receiving one of four regimes: (i) "Robaden" and cabbage juice, (ii) "Robaden" alone, (iii) cabbage juice alone, (iv) neither "Robaden" nor cabbage juice. The "Robaden" was given parenterally and by mouth; the cabbage juice was given daily for three weeks in a daily dosage of one litre of juice expressed from fresh cabbages. The patients were kept in

bed for four weeks. The basic diet was continued for three weeks; in the fourth week a convalescent gastric diet was substituted. An alkaline powder was given if requested by the patient for the relief of pain. Half the patients in each treatment group were given milk by the intragastric drip method. Progress was assessed subjectively by the patient's description of his symptoms and objectively by radiological measurement of the size of the niche.

The use of cabbage juice in the treatment of both gastric and duodenal ulcers has been recommended by Cheney in America on the grounds that it contains a factor termed vitamin U, which is capable of preventing the development of histamine-induced ulcers in guinea-pigs, and apparently Cheney has himself recorded some remarkable but uncontrolled results. Doll and Pygott found the results with cabbage juice so discouraging that its use was abandoned after 24 patients had been treated with the juice and 24 without it. Their results, which they tabulate, show no appreciable difference between the patients receiving cabbage juice and the control group. Indeed, rather more of the ulcer niches became larger among the patients receiving cabbage juice (seven out of 24 as against two out of 24 among the control patients), but the difference is not statistically significant. Doll and Pygott state that it is possible that the discrepancy between their results and Cheney's arises from the use of insufficiently fresh cabbages or of a different type of cabbage in their investigation. Alternatively, it is suggested that Cheney's patients were initially not suitable for comparison with the patients who were studied by the other workers.

"Robaden" is stated to have been the subject of many investigations during the past ten years. It is described as a proprietary preparation of gastric and intestinal tissue extracts which has been found to protect pylorus-ligated rats against the development of gastric ulcers, and guinea-pigs against the development of histamine-induced ulcers. A substantial number of investigators have reported favourable results, but most of these reports appear in continental journals and the work was uncontrolled. The only two reports of fully controlled trials that Doll and Pygott have been able to find were from British workers, and these showed no beneficial effect which could be attributed to "Robaden". Doll and Pygott's groups consisted of 32 patients given "Robaden" and 32 controls, all treated as in-patients. In addition to this, in view of the claim that "Robaden" is of particular value in the prevention of relapse among out-patients on full diet, the investigation was extended to assess the effect of "Robaden" under these conditions and over a longer period. Again the investigation was carefully controlled. Doll and Pygott state that neither when given to in-patients in conjunction with the standard ulcer diet, nor when given to out-patients on a liberal diet was any appreciably greater healing obtained when treatment with "Robaden" was given than when it was not given; nor, with one exception, was there any diminution of symptoms. The exception was that in the two months after discharge from hospital more of the patients who had been treated on "Robaden" in hospital and who continued to take "Robaden" tablets as out-patients were completely free of pain, and fewer complained of occasional attacks of pain. The proportion who suffered a definite relapse was, however, the same as in the control group. It is suggested that the relative freedom from minor symptoms may have been an effect of suggestion, since in this part of the trial the control patients were given no special treatment by the mouth, and it is in the prevention of minor symptoms that suggestion is most likely to be effective. In a second trial in which all patients were given tablets of similar appearance, no difference was observed between the proportions of patients complaining of minor symptoms. Doll and Pygott state that from consideration of all the evidence it seems reasonable to conclude that "Robaden" has no beneficial effect in the treatment of patients suffering from gastric ulcer.

The study appears to have been conducted with care, and the results give no encouragement to the advocates of cabbage juice and "Robaden" in the treatment of gastric ulcer. They do, however, emphasize the importance of controls in therapeutic trials.

¹ *Lancet*, December 11, 1954.

Abstracts from Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

Movement of Lymphocytes.

H. HARRIS (*Brit. J. Exper. Path.*, December, 1953) has studied the movement of lymphocytes collected from the thoracic duct of the rabbit. They were both large and small sized cells, and were viable, as shown by the ability to concentrate a vital dye such as neutral red, but only 20% to 30% were motile. They were observed and photographed at intervals, moving through a fine plasma coagulum, in the presence of clumps of various microorganisms and of starch grains in a search for evidence of a chemotactic effect. They were also observed in the presence of virus-infected tissue culture cells, and of autolysed rabbit muscle and liver. In no case was any evidence of a chemotactic effect observed. It was recorded, however, that the lymphocyte never adheres to glass as does the granulocyte, suggesting that the surface properties of the two types of cell are fundamentally different.

The Release of Histamine by Mast Cells.

D. W. FAWCETT (*J. Exper. Med.*, August, 1954) has made cytological and pharmacological observations on the release of histamine by mast cells. He used the rat peritoneum, because it is rich in these cells which can be differentially stained, and because they can be destroyed by the intraperitoneal injection of water. An experimental compound known as 48/80, made up in isotonic saline, was found to cause rupture of mast cells and release of their granules; so these two methods were used to test the proposition that the cells contained histamine, which would be released into the peritoneal fluid and so could be measured there. The technique used for this purpose depended on the effect of the fluid on an isolated segment of guinea-pig ileum, treated with atropine. The condition of the peritoneum was also examined microscopically. Appreciable amounts of histamine could be demonstrated after the injection of distilled water, and larger amounts after compound 48/80; if the mast cells were destroyed by distilled water and after a period of time compound 48/80 was injected, no increase in histamine took place.

Local Antibody Agglutination by Lymphocytes.

S. P. HAYES AND T. F. DOUGHERTY (*J. Immunol.*, August, 1954) have continued studies on local antibody production by the demonstration of agglutination by lymphocytes. They placed capillary tubes containing formalized *Salmonella typhi* or *S. typhimurium* in the subcutaneous tissues of the abdominal wall of mice and allowed them to remain there for four to six days. After the animals were killed, the tissue adhering to the end of the capillary tube was

spread in thin sheets on slides and air dried, and then covered with a saline suspension of the same bacteria and allowed to remain in contact for two hours in a moist chamber; then the remainder of the antigenic suspension was allowed to flow away, and the films were stained by Giemsa's method. On examination, the lymphocytes were found to be ringed about with parallel rows of "agglutinated" bacteria, the long axes of the bacteria being side by side with the lymphocyte cell surface. While not all cells in the same smear showed the effect, it was entirely absent from control mice inoculated with saline-diluted horse serum, although the cells were present in comparable numbers. The authors state that this is further proof that lymphocytes partake in local production of antibodies.

Non-Reactive Tuberculosis.

J. R. O'BRIEN (*J. Clin. Path.*, August, 1954) discusses non-reactive tuberculosis. He has analysed 66 cases from the literature, and arrived at a definition of this fatal form as one in which many organs contain foci of necrosis with large numbers of acid-fast bacilli surrounded by normal parenchymal cells. In life there are gross abnormalities of haematopoiesis, and the patient may succumb to an extremely acute process or, less commonly, to pyrexia with obscure anaemia. There appears to be no primary focus, and tuberculous meningitis is not reported. The non-reactive lesions were found in liver, spleen and bone marrow. Both human and bovine forms of the bacilli have been isolated. The author discusses this human syndrome with reference to the recent experiment of H. Bloch, and suggests that the nature of the induced sensitivity in these patients is comparable to that of mice infected with large doses of rapidly growing organisms which are liberating large amounts of metabolic products, and that this does not permit of the "normal sensitivity response".

Immunity not Associated with Antibody.

D. G. EVANS AND F. T. PERKINS (*Brit. J. Exper. Path.*, August, 1954) discuss the ability of pertussis vaccine to produce in mice specific immunity of a type not associated with antibody. They state that the ability to protect mice when challenged by intracerebral inoculation is one of the accepted methods of testing the potency of vaccines of *Haemophilus pertussis*, and in testing four different vaccines they investigated the appearance of agglutinating and complement-fixing antibodies. A large group of mice were given a single dose of vaccine intraperitoneally and were challenged with 100 LD₅₀ of virulent *H. pertussis*. When 94 out of 134 animals survived the challenge, a similar group were not challenged but were bled on the third day, and their serum was tested for agglutinin and complement-fixing antibody, one titre being below 10, the other below 2. The serum was also used for experiments in passive immunity in a further group of mice, one millilitre of serum being given intraperitoneally—this before challenge with a range of minimum lethal doses. There was no

protection against 100 or 20 minimum lethal doses, while 21 out of 30 survived a challenge of 0.8 minimum lethal dose. If the serum was given after challenge, no effect at all could be shown. Mice vaccinated with other haemophilic antigens, with diphtheria prophylactic or with dextran showed no protection; so that the protective effect against cerebral challenge of a single intraperitoneal injection of pertussis vaccine in mice appears to be specific and independent of circulating antibodies.

Phagocytosis Without Antibody.

W. D. SAWYER, MARY R. SMITH AND BARRY WOOD, JUNIOR (*J. Exper. Med.*, October, 1954) have studied the mechanisms by which macrophages ingest encapsulated bacteria in the absence of antibody. The cells were obtained from the rat peritoneum after the injection of beef infusion broth, washed in Locke's solution containing heparin and 1% of gelatin, and stored on ice. Suspensions of cells were mixed with fully encapsulated type 1 pneumococci and incubated for thirty minutes at 37°C., and examination of stained films revealed no phagocytosis; but in a similar suspension containing homologous antiserum, prompt ingestion of the bacteria was seen. When the suspension was spread on the surface of slices of fresh rat tissue or on moist filter paper, phagocytosis occurred without antibody. Dilution of the cell suspension in order to prevent trapping of the bacteria between cells also abolished the occurrence of phagocytosis. If the cells and bacteria were mixed in citrated plasma, no phagocytosis followed; but if thrombin was added and the plasma clotted, then macrophages were able to ingest the bacteria. The authors discuss the part played by these wandering macrophages in agranulocytosis and in experimental agranulocytosis produced by irradiation.

Poliomyelitis in Households.

D. BODIAN AND R. S. Paffenbarger, JUNIOR (*Am. J. Hyg.*, July, 1954) have studied poliomyelitis in households and the frequency of viraemia and the specific antibody response. The study was made possible by the sharp outbreaks of the disease in Minnesota and in Maryland. Paired samples of blood, one month apart, were obtained from household contacts of patients for virus isolation from serum. Faecal samples also were obtained from patients for confirmation of diagnosis. Roller tube tissue cultures of monkey kidney were inoculated with undiluted serum and later passaged into the rhesus monkey brain. Type 1 virus was isolated from five contact children who had no antibody at the time of first being bled. Thirty-three children showed a 10-fold rise in type 1 antibody; 81 had levels higher than 1:100 in each sample of serum. It was shown in contacts in whom an antibody rise was demonstrated that they had been bled within five days of the onset of the disease in the primary case with which they had contact; while of 84 household contacts who had been in contact with a patient proved to have virus in the faeces, only six gave no evidence of infection. In one epidemic involving 23

children in apparently close contact with infective cases, although virus was isolated from the faeces of six, no serological response could be found. The authors' tables make it clear that the frequency of household infection is less when the primary case occurs in an adult than when it is in a child.

Viruses and the Electron Microscope.

C. MORGAN, S. A. ELLISON, H. M. ROSE AND D. H. MOORE (*J. Exper. Med.*, September, 1954) have continued their studies on the structure and development of viruses observed in the electron microscope, using ultra-thin sections of chick embryo chorio-allantoic membranes infected with the viruses of vaccinia and of fowl pox. The two viruses proved to be of similar structure and size, averaging 200×300 m μ , within the cytoplasm of endodermal cells. The viral particles contained a nucleus-like body and a clearer granular zone within the limiting membrane. Some of the particles were observed to be situated near the surface of the cell, and some in the extracellular spaces, and here the limiting membrane appeared double. Study of numbers of sections suggested that the double membrane appeared before the particles were released from the cell. It was suggested that the brick-shaped particles commonly described had been distorted by drying.

HYGIENE.

Carbon Disulphide Poisoning in Viscose Rayon Factories.

E. C. VIOLIANI (*Brit. J. Indust. Med.*, October, 1954) states that the production of artificial textile fibres by the viscose process exposes workers to the hazard of carbon disulphide poisoning. During the Second World War, many cases of chronic carbon disulphide poisoning occurred in the viscose rayon plants of European countries, including Italy. The most common manifestation observed was polyneuritis, which occurred in 88% of cases. After the war, working conditions in viscose rayon plants improved considerably; so that today it is quite rare to meet with new cases of carbon disulphide poisoning with classical symptomatology. On the other hand, many cases of chronic vascular encephalopathy have developed in workers exposed for ten to thirty years to atmospheres containing carbon disulphide vapour in concentrations which, during the war years, were beyond that allowable. The author reports 43 such cases met with during the period 1946 to 1953 in four plants in Lombardy. He states that patients with chronic encephalopathy exhibited symptoms of pseudobulbar paralysis with mental deterioration, frequent extrapyramidal involvement and focal signs of cerebral thrombosis. Sixteen cases were associated with hypertension, and in five cases there was kidney insufficiency with albuminuria. It was shown by clinical features, electroencephalography and cerebral arteriography in several cases, and by post-mortem examination in three cases, that

the encephalopathy was vascular in nature and due to sclerosis of the small arteries and capillaries of the brain and spinal medulla. In one case, renal glomerulosclerosis of the Kimmelstiel-Wilson type was observed. Experimental exposure of rats and guinea-pigs for several months to appropriate concentrations of carbon disulphide produced hyperplasia and sclerosis in the media and intima of the brain arterioles. The hypothesis is advanced that prolonged exposure to carbon disulphide can lead to a situation favourable for the production of atherosclerosis.

Excessive Fluoride in a Water Supply.

N. C. LEONE *et alii* (*Pub. Health Rep.*, October, 1954) report a study to determine if prolonged exposure to fluoride in the water supply produced detectable physiological effects. The study was carried out over a period of ten years and involved 116 persons in Bartlett and 121 in Cameron, Texas. Bartlett's water supply contained about eight parts per million of fluoride until 1952; when an experimental defluoridation unit was installed, reducing the fluoride content to approximately 1.2 parts per million. Cameron was the control area with 0.4 part per million of fluoride in its water supply. The participants in the study, who were aged fifteen to sixty-eight years in 1943, were chosen at random from persons who had lived in the respective communities for at least fifteen years. The average length of fluoride exposure in 1953 was 36.7 years. In 1943, the investigators took medical histories and carried out medical, X-ray and dental examinations on each participant. In 1953, this procedure was repeated for all participants except 18 who had died, and 10 of the 47 persons who had moved away from the two towns. No significant differences were observed between the findings in the two towns, except for a slightly higher rate of cardio-vascular abnormalities in Cameron and a marked predominance of dental fluorosis in Bartlett.

Botulism in Canada.

C. E. DOLMAN (*Canad. M.A.J.*, September, 1954) reports four previously unreported botulism episodes in Canada. He states that these bring the total number of outbreaks of botulism in Canada to 14, with 63 persons involved, 35 deaths and a case fatality rate of 56%. In the recent outbreaks corn on the cob was responsible for the death of a young girl and her father, spinach caused mild botulism in two adults, and beets were the probable vehicle of moderately severe botulism in another instance. All these products were home-bottled. Toxicogenic strains of *Clostridium botulinum* type A were isolated from the residual corn, and from two out of six companion jars of spinach. Similar organisms were present in the soil of the farms involved. The authors list four preventive measures of importance. First, all vegetables and fruits for home preserving must be thoroughly washed and free from blemishes. Second, proper containers should be used, preferably special glass sealers with tight-fitting tops and screw-on

lids. Third, adequate cooking is necessary; boiling, even for prolonged periods, is not enough, as destruction of type A botulinus spores requires heating to 250° F. for at least seventy minutes in a steam pressure cooker. Fourth, thorough heating of home-bottled foodstuffs to 100° C. for ten to fifteen minutes before serving should destroy any of the relatively heat-labile preformed toxin. Diagnosis of acute botulism should not present difficulty to the informed clinician, but subacute cases, especially if they are isolated, may offer some difficulty. Specific therapy has not received a great deal of support in North America. Symptomatic treatment is important.

Insecticide Fumigating Devices.

THE COMMITTEE ON PESTICIDES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION (*J.A.M.A.*, October 9, 1954) states that experience of the last few years in the use of devices to volatilize insecticides into the atmosphere of homes and commercial establishments has provided proof of the dangers of excessive exposure to the vapours and fumes of D.D.T. Insecticidal poisons that are effective because of deliberate continuous pollution of the atmosphere have questionable safety. Opposition is expressed to the home use of continuously operating devices (insecticide vaporizers), and a warning is issued that extreme care is required in the intermittent use of such equipment promoted as so-called insecticide fumigators.

The Patch Test and Contact Dermatitis.

THE COMMITTEE ON THE OCCUPATIONAL DERMATOSES OF THE COUNCIL ON INDUSTRIAL HEALTH OF THE AMERICAN MEDICAL ASSOCIATION (*J.A.M.A.*, October 2, 1954) state that diagnostic patch testing, when properly performed and correctly interpreted, is of definite value in assisting to establish the cause, in many cases, of contact dermatitis due to sensitization. The employment and validity of the test are dependent upon the clinical history, the nature of the lesions, the site of the eruption and the course of the disease. In order to ensure the intelligent use of the procedure, the examiner should be well acquainted with the chemical nature of the contactants handled at work, in the home, at play, in certain hobbies and in modern therapy. Proper concentration of the test material is of great importance in performing the patch test. The specific technique to be employed will vary according to the substance in question. Primary irritants should not be used for patch testing, except in non-irritant concentrations. The eczematized skin has a lower threshold of reactivity of specific and non-specific nature than has the normal skin. The prophetic patch test is valuable for screening new materials for their cutaneous, irritant and sensitizing potential. For the test to be highly effective, however, it must be followed by a usage trial. Of major importance is the fact that the patch test is continually subject to change and refinement and that absolute reliance upon its results in all cases is not justifiable.

Public Health.

INTERNATIONAL UNION AGAINST TUBERCULOSIS.

THE thirteenth conference of the International Union Against Tuberculosis was held in Madrid in September and October, 1954. The following report has been prepared by Dr. Peter Harvey, who attended the conference as official observer to the National Association for the Prevention of Tuberculosis in Australia (NAPTA).

INTRODUCTION.

In this report I have not dealt with any of the facets of the organization of the conference, but have restricted myself to the medical material presented.

However, three aspects of the organization had such an intimate bearing on the presentation of the medical material and its correct interpretation that I must mention them at once, if only to establish an excuse for myself should the later published reports show that I have misquoted certain speakers:

1. The organizers accepted nearly twice the number of congress members as there were seats in the congress hall. Each seat was provided with earphones which gave an immediate translation into one of four languages. Many people unable to obtain earphones were unable to understand the speaker.

2. The English translator was not quite good enough. Though collecting the main words in a sentence, he did not seem to appreciate the all-important shades of meaning, such as between "must" and "ought", "usually" and "always", and not infrequently was unable to give any sense at all. However, as the most important reports were in English or well-translated French, this was not so serious.

3. The chair did not force speakers to keep to the point, and vast amounts of time were spent on aspects irrelevant to the point under discussion. Most speakers came with a prepared screed of their own ideas and results and read it at lightning speed irrespective of anything that had been previously said.

Before concluding these opening remarks I should like to say that whilst I gained a wonderful perspective of world opinion on the three problems discussed, I found it impossible to form any conclusions from the evidence presented. The wide variety of opinions and "facts" presented made it easy to reach any of a number of widely different and contradictory conclusions by selecting the suitable parts of the presented material.

Certainly, whatever views one held beforehand, one could find support for them and further condemnation of opposite opinion. On talking to Spaniards, Scandinavians, British, Italians, Americans and Australians after the conference I felt that they all considered the meeting of little value, as they had only heard what they already knew.

In my ignorance I have mostly taken heed of the words of the chief reporters and those whose names I had previously heard and may have completely ignored an important report by a lesser known contributor.

PART I: INFLUENCE OF ANTIBIOTICS AND CHEMOTHERAPY ON TUBERCULOUS LESIONS.

The first part of the conference was devoted to a discussion on anatomical and bacteriological changes in tuberculous lesions under the influence of antibiotics and chemotherapy.

Dr. Georges Canetti, of the Pasteur Institute, opened this subject with a long and carefully prepared report occupying 100 pages of the preliminary bulletin. His series of 93 surgical and autopsy specimens, obtained after antibiotics and chemotherapy and examined anatomically and bacteriologically in the most minute detail, though only small, was the largest completely studied series presented at the meeting. He backed this work with an extensive analysis of the literature on clinical and experimental tuberculosis. I will follow his general plan of headings and indicate where others confirmed or denied his findings.

Anatomical and Histological Modifications. *Acute Miliary Tuberculosis.*

General agreement was reached that results in acute miliary tuberculosis were spectacular—that healing of the miliary lesions was complete. If large nodules had formed before treatment, cicatrization of these often led to widespread focal emphysema. Extrapulmonary and associated caseous or cavitating pulmonary lesions were invariably the cause of relapses.

Chronic Pulmonary Tuberculosis.

The following five histological patterns of chronic pulmonary tuberculosis were discussed:

1. *Exudative Alveolitis.*—As this is associated always with multiplication of the bacilli it invariably clears under antibiotics and chemotherapy.

2. *Perifocal Inflammation.*—This less clearly defined accompaniment of acute tuberculosis bronchopneumonia also was not found after antibiotics and chemotherapy.

3. *Specified Cellular Reactions.*—Lymphocytes tend to disappear and endothelial and giant cells to increase during early healing, and later also, should healing be incomplete. Dr. Canetti laid stress on a cellular metaplasia of giant cell and endothelial type extending widely into alveoli in the neighbourhood of healed lesions. A few others (including Ibiapana, of Brazil) were very excited about this "adenomatous process" supposed to occur only after antibiotics and chemotherapy. Apparently most pathologists had not observed this phenomenon.

4. *Caseous Lesions.*—These are mostly refractory to the actions of antibiotics; certainly the large and old lesions are. It seems likely that chemotherapy succeeds in transforming some recent small caseous lesions into collagenous scars. (In guinea-pig tuberculosis, animals sacrificed on the thirtieth day untreated contain many more caseous foci than those in a control series given antibiotics and chemotherapy from the thirtieth to the sixtieth day and then sacrificed.) In man some of the radiological shadows which resolve under antibiotics and chemotherapy may be caseous; this is unproved, of course. As to whether caseous lesions are ever prevented from softening, there was no good evidence in any of the reports.

5. *Cavities.*—Cavities may react as follows: (a) They may remain unclosed, but histological examination shows healing and diminished inflammation in the walls. (b) They may close completely, with resultant fibro-caseous or fibrotic scars. (c) They may reach one of three intermediate stages: (i) The filled cavity. Unlike a similar lesion resulting from rest or collapse therapy, the bronchus remains open with epithelialization of the broncho-cavitary junction well marked. (ii) Clean fibrotic empty cavities, often with squamous epithelialization of the walls (there is no tuberculous granulation tissue in these cavity walls). The bacteriology is discussed later. (iii) Bullous thin-walled cysts, with no fibrous tissue. This is particularly common after isoniazid therapy. There was quite considerable excitement over these intermediate forms of cavity closure. D'Esopo, of the United States Veterans Administration, pointed out that they had all been seen before antibiotics and chemotherapy on rare occasions, and that their greatly increased presence was due, of course, to the rapidity of sterilization of the lesions producing different healing mechanisms from those seen previously. The problem of management of these "sterile" lesions was passed lightly over.

Many speakers illustrated healing of tuberculosis in various body organs in man and experimental animals treated by antibiotics and chemotherapy, without introducing new concepts.

In general it seems likely that no new processes of healing have been shown in pulmonary tuberculosis treated by antibiotics and chemotherapy, but that the usual patterns of healing have been accelerated and altered so that once rare mechanisms are now relatively frequent.

Bacteriological Considerations.

Sterilization of Tuberculous Lesions.

It was shown that the success or otherwise of sterilization of tuberculous lesions depends upon their nature. Many varied figures were given of the percentage of "sterile" lesions found after antibiotics and chemotherapy, but all showed less success for cavities remaining open than for "closed" caseous lesions. For example, the following figures were given by Canetti: open cavities, 76% of positive culture results; caseous lesions, 36% of positive culture results. Interestingly, closed caseous lesions found in resected specimens showed the same percentage of positive culture results whether antibiotics and chemotherapy had been used or not. This does not mean that antibiotics and chemotherapy have no effect on such lesions, for they may help some to resolve. However, if caseous lesions are created or persist during chemotherapy, they have the same bacteriological status as in a non-treated group.

In direct smears acid-fast bacilli were found in 60% to 90% of caseous lesions, but in only 6% to 36% were these bacilli able to produce guinea-pig disease or to grow on culture.

Much discussion arose on the preparation of material for culture and inoculation, as the bacillus seems to be in rather a "pernickety" state after antibiotics and chemotherapy. Also Grumbach, of France, and Hadurey, of Switzerland, stated that mice and hamsters were much more susceptible to these organisms and should be used instead. A number reported being able to grow bacilli non-virulent to the guinea-pig.

The whole subject was confused, but there was general agreement that some bacilli seen in smears from caseous foci are "non-viable", however many and careful techniques are employed.

Two other minor points were made by speakers from the United States Veterans Administration (for example, D'Esopo): (a) Of cavities resected from patients with a negative finding from sputum examination after antibiotics and chemotherapy 50% contained viable bacilli. (b) In 33% of all lesions in which streptomycin had been given by a twice weekly regime, viable bacilli were found, as against in only 10% of those cases in which it had been given daily. No conclusions were drawn from this, but the method is still extensively used in the United States of America and in Japan.

Drug Sensitivity of Bacilli.

The drug sensitivity of bacilli isolated from lesions after antibiotics and chemotherapy was discussed and the following points were brought out:

1. As in the sputum, the incidence of resistant bacilli in lung lesions diminished with the use of more than one drug.
2. However, resistance to isoniazid was found in up to 63% of cultures obtained from specimens from patients subjected to three to six months of combined treatment, as against in only 17% for streptomycin similarly used.
3. Tubercle bacilli from various lesions in the same lung show varying degrees of resistance to the antibiotics and chemotherapy used (Turnbull *et alii*, of Edinburgh).
4. The incidence of resistant bacilli in lung lesions was shown in various reports to be correlated directly with such things as the lack of cavity closure, the duration of antibiotics and chemotherapy, the initial clinical condition of the patient (toxicity temperature, erythrocyte sedimentation rate *et cetera*) and the initial bacterial counts. It was also shown that failure of the bacillary counts to fall was an excellent criterion of the development of drug resistance, giving information long before culture techniques.
5. It seems agreed that streptomycin-resistant bacilli are just as virulent to experimental animals as sensitive bacilli, but Canetti and many others reported that bacilli becoming resistant to isoniazid are far less virulent to the guinea-pig. The obvious far-reaching importance of this generally accepted "fact" in relation to human tuberculosis has not been worked out.
6. Resistance to streptomycin remains permanent in subcultures, but is variable in the case of isoniazid. Subcultures of bacilli sensitive to isoniazid may emerge from a resistant strain. Again, the clinical importance of this has not been assessed.

Mechanisms.

Diffusion of Chemotherapeutic Agents into Lesions.

The very little material available showed that adequate concentrations of streptomycin, at least, and probably of isoniazid, are present in material from cavities and caseous lesions irrespective of their degree of encapsulation.

Diffusion of Agents into Cells.

Evidence suggests that viable bacilli within macrophages are not subjected to a lethal concentration of streptomycin.

Inaccessibility of Resting Bacilli.

The inaccessibility of resting bacilli is one of the crucial points in antibiotics and chemotherapy of tuberculosis. Very little work was presented on this topic. Xalabader, of Spain, vigorously propounded his theory that the acid-fast rod is only one of the larger microscopically visible forms of the *Mycobacterium tuberculosis* and that smaller phases exist.

The Nature of Action of Antibiotics and Chemotherapy on the Bacillus.

Some question was raised whether streptomycin was truly bactericidal, as is believed by some. The mechanisms of action of isoniazid are not understood.

General.

Finally, the whole process of diffusion and action of the drug and the processes of healing which followed in various types of lesions were postulated at length by Canetti.

Conclusion.

In conclusion, I would remark that in nearly every country represented detailed work is proceeding on this main topic of anatomical and bacteriological effects of antibiotics and chemotherapy, all available resection and autopsy material being used.

Within five years a vast number of figures and "facts" will either prove or disprove many of the above-mentioned points. If results of treatment are to be scientifically assessed, every major centre should be prepared to examine carefully both structurally and bacteriologically all biopsy and autopsy specimens.

PART II: SURGICAL INTERVENTION.

The place and choice of surgical intervention in pulmonary tuberculosis treated by antibiotics and chemotherapy were discussed. Widely conflicting opinions were held on nearly every type of treatment in this field. There was some sort of agreement amongst members of the British, American and Scandinavian schools, where surgery is more advanced and giving much better results than in the hands of the Latins.

Some general points may be mentioned first: (i) All but the rare heretics gave pride of place in the treatment of tuberculosis to the long-established "hygienic, dietetic, rest" regime. (ii) Chemotherapy has undoubtedly made surgery safer, and the two combined have shortened the period of treatment considerably. The dangers of undue shortening of treatment were stressed by the Scandinavians in particular. The type and duration of antibiotics and chemotherapy prior to surgery was not a main discussion point. The United States Veterans Administration and most other United States groups are still using twice-weekly streptomycin administration prior to operation, with immediate surgical results second to none. (iii) The danger was stressed of delaying surgery in a futile attempt to close a cavity or obtain further clearing of caseous lesions by antibiotics and chemotherapy. In such cases the incidence of sputum conversion occurring later than three months is small, and minimal after six months, whilst the incidence of resistant bacilli rises sharply.

Torning, summarizing everyone's opinion, said that the pre-operative duration of antibiotics and chemotherapy should be "a few weeks to a few months".

No one tackled the question of duration of post-operative antibiotics and chemotherapy except Steele, of the United States Veterans Administration, who said that there was a tendency now to carry it on beyond the three to four months, even to "years".

The problem of selection of subjects for "surgical treatment" was passed over in a number of reports in favour of quoting results. Tarning quoted Nubsuer's maxim as his general guide: "One should only resort to surgery in cases of pulmonary tuberculosis when it is clear that the organism is willing to get cured but cannot succeed for some reason or other."

Surgery may be divided into (i) collapse measures and (ii) resection. It is apparent that in all countries where the facilities are available resection has taken the lead as the definitive surgical treatment, and elsewhere it is gaining ground. Thoracoplasty has lost a little ground, and the temporary collapse measures have extensively yielded their pride of position as the chief definitive treatments.

Collapse Therapy.

Temporary Measures.

Artificial Pneumothorax.—Artificial pneumothorax has lost much ground, but is still being used very widely, and many speakers stressed the tendency of surgeons to compare the results of surgery *plus* antibiotics and chemotherapy in 1953 with pneumothorax performed without these in the days when there was practically no alternative treatment available. The United States Veterans Administration, Keers, of Scotland, and many others would never use artificial pneumothorax. On the other hand, Larmon, of Finland, and Kraan, of Holland, pointed out that we are now only just learning its correct use; and, more significantly, both the surgeons, Tarning and Craaford, consider that it has an undoubted and important place in treatment of disease of recent origin and limited extent. Craaford includes patients with thin-walled cavities up to two centimetres in diameter and recent bronchopneumonic disease as suitable for this treatment. He will use an extrapleural pneumothorax in certain similar cases associated with thick adhesions, reserving the Jacobus operation for cases with relatively few, long, cord-shaped, band-shaped or sail-shaped

adhesions. The known greatly increased risk of relapse in subjects "cured" with chemotherapy in the 1950's as against those previously "cured" without in the 1930's leads these schools to induce an artificial pneumothorax in cases in which radiological residues are minimal or nil after antibiotics and chemotherapy, and obviously no surgical help is required. Craaford considers that one or two years may be long enough to maintain these artificial pneumothoraxes and thus prevent the diminished lung function which often follows long-maintained artificial pneumothorax. Complications in well-selected series can be reduced to virtually nil; 4% diminished lung function, 0.38% empyema was recorded in one series of 500 carried out with antibiotics and chemotherapy. It was stressed that artificial pneumothorax must be immediately abandoned if there are dense adhesions, if the cavity remains unaltered, or if atelectasis or fluid is more than transient (Torning).

Pneumoperitoneum.—Pneumoperitoneum was described by Craaford as "a good auxiliary method of therapy in combination with antibiotics and chemotherapy during prolonged conservative treatment in severe cases with widespread disease". He also pointed out its great psychological value in this group of patients, for whom surgery is not yet possible and who feel they would like some "active treatment". The United States Veterans Administration used pneumoperitoneum only in eight of 800 cases at one sanatorium and then to control haemoptysis. It is mostly losing ground, but as with artificial pneumothorax it seems destined to have its occasional uses in the non-fanatical schools.

Phrenic Paralysis.—Phrenic paralysis was widely damned in view of its deleterious effect on post-operative ventilation and coughing if resection later proved necessary. However, Steele (United States Veterans Administration) said that its bad reputation was unfounded and that they used it to advantage for space filling with resection.

Permanent Measures.

Plombage.—There was no proof that plombage is a safe procedure. The Scandinavians and Americans never use it by choice because of its high, early and late, complication rate. Possible indications are as follows: (i) In adolescents to avoid spinal deformity, whilst growth continues. Probably thoracoplasty should be done later. (ii) In the very aged and those with limited life-expectancy from other causes. (iii) For cosmetic reasons in patients whose livelihood is threatened by thoracoplasty. (iv) For extensive disease precluding resection, which includes cavities to be closed that are out of range of thoracoplasty.

Thoracoplasty.—The indications for use of thoracoplasty varied to extremes. It is still considered a mainstay of treatment by the Scandinavians, who use it for "upper lobe disease in which there is a marked tendency to shrinkage, provided the lesion is not too old, hard and 'frozen'" (Craaford). Tension cavities and "blocked" cavities may respond well. Sometimes a thoracoplasty is tried first in the knowledge that resection may later be required. Torning is not put off by thick-walled cavities and claims excellent results in all upper lobe cavities. He expects 60% to 90% permanent "cure" from this operation. A Holst-Semb operation is performed by removing four to seven ribs in two stages. Extra-fascial pneumothorax combined with thoracoplasty is being abandoned. The United States Veterans Administration gave no details of their indications, but from their figures it would appear that they perform one thoracoplasty for every five resections.

Cavitary Drainage.—Cavitary drainage is used virtually only by Monaldi's group, whose vigorous propaganda on its behalf consisted of showing a series of successful cases without any discussion of indications. That complications occur was not admitted. It is not used in Scandinavia or by the United States Veterans Administration.

Resection.

As is well known, resection is being more and more widely used. To quote Torning again, his indications for pneumonectomy and lobectomy are as follows: cases with a cavity in a big fibrosclerotic block, a giant cavity, an area of necrosis involving a considerable part of a lobe, a destroyed lung, a residual cavity after a well-performed thoracoplasty or after the abandonment of temporary collapse, a severe stenosis of a main or secondary bronchus, and severe haemoptysis and bronchiectasis. In tuberculous empyema, decortication or pleurectomy is combined with the resection.

In all cases in which a lobe or more is removed, the Scandinavians carry out a "talloring" thoracoplasty before or with the resection. An osteoplastic flap is turned down and the rib ends are attached to the superior surface of

the uppermost intact rib. In this way no part of the chest wall is left to "flap" or fall in and interfere with post-operative suction. Craaford showed a film of the operation and claimed that he had had no complications at all from continuing thoracoplasty with resection. It is believed that it is fundamentally wrong to over-distend other parts of the pulmonary tissue after a large portion has been removed for tuberculosis.

The indications for segmental and wedge resection were less clearly defined. The main lesions suitable for this treatment, and subject to debate, are the small, rounded opacities with or without central translucency. If there is any possibility of malignant change, everyone agrees that they should come out.

Torning again was most lucid on this point. He used the figures of Duroux and Janion, who followed 170 patients for nineteen years and found that if the lesions were less than two centimetres in diameter only 4% progressed, if three to four centimetres 27% progressed, and if six centimetres or more 70% progressed in the days before antibiotics and chemotherapy; and he said that if the solid lesion was three centimetres in diameter or larger and the sputum contained organisms he would resect after suitable antibiotics and chemotherapy. If the lesion was smaller, or the sputum contained no organisms and there was no change in the lesions under observation he preferred to watch it.

Mortality After Resection.

The figures of the United States Veterans Administration are so outstanding as to demand quotation. They also indicate the relative frequency of the various procedures. They are as follows: pneumonectomy, 61 cases, 6 deaths; lobectomies, 370 cases, 10 deaths; segmental resections, 433 cases, 2 deaths; subsegmental resections, 353 cases, no deaths.

Complications after resection were listed from one of their sanatoria as follows: number of patients, 274; number of resections, 279; lung leaks, 43; haemothorax, 9; empyema, 6; total, 58 (20%).

Finally, in discussing surgery, the importance of lung function tests was stressed by Craaford and Torning first and later by other speakers. A number of surgeons were aware of the respiratory cripples they had created, and a few physicians had collected cases of "*cor pulmonale*" following shortly after resection.

Though not every patient needs lung function studies, Torning believes that any hospital which seriously undertakes thoracic surgery should be able to assess the respiratory function of doubtful patients by the latest techniques, and that much more study of the short and long term physiological effects of thoracic surgery is urgently required.

PART III: CHANGES IN TUBERCULOSIS CONTROL AS A RESULT OF MODERN THERAPY.

A discussion was held on changes in the control of tuberculosis as a result of modern therapy. The chief reporter was Dr. F. Blanco, of Spain.

Statistics.

The annual death rate from tuberculosis of 27 nations was available for study, and the changes noticed were general throughout the world.

Many graphs and tables showed that the well-known fall in mortality from tuberculosis proceeded without significant change until 1949. Of course, the effects of World War II were clearly shown on the graphs. From 1949 to 1951, however, a dramatic fall of 30.3% was averaged, and in the year 1952 the astonishing figure of a general fall of 35.6% was obtained.

In attempting to analyse these falls several factors were discussed: (i) There was no fall in the general mortality rate in this period. (ii) The fact that the fall accelerated over the years 1949 to 1952 excluded the possibility that a number of tuberculous patients "died before their time" during the war with a consequent fall in mortality shortly afterwards. (iii) There seemed a correlation between the availability of streptomycin in any country and its annual fall in mortality. By 1951, with streptomycin available for one or two years in most countries, the rate of fall was definitely flattening out. (iv) The year 1952 was phenomenal. Isoniazid was suddenly widely available throughout the world, owing in part to its cheapness and in part to an energetic propaganda campaign. Whereas throughout the 27 countries analysed a 25% or greater fall in mortality for one year compared with the previous had occurred only six times in sixteen years, in 1952 alone 11 countries achieved this at least 25% fall.

The Morbidity Situation.

The trend of morbidity from tuberculosis does not run parallel to that of mortality. The number of deaths cannot therefore be of help in establishing the number of active cases. In the very few countries (Germany, Canada, England, Scotland) where morbidity statistics exist on a national scale (even if they are not entirely reliable) there is a visible gap opening between the number of deaths and the number of newly registered cases. The latter rate is following either very slowly or not at all the fall of the mortality rate.

That newly registered cases do not represent morbidity was not clearly stated, and effects of more efficient case-finding and official registration were not assessed in keeping the "newly registered rate" constant. The need for every country to have morbidity statistics was stressed.

That modern antibiotics and chemotherapy and surgery create an increased number of "chronics" from potentially doomed patients was widely agreed. Whether they are having a like effect at the other end in "curing" an equal, greater or less number of patients previously doomed to be "chronics" was not discussed.

Speakers from most continental countries claimed that they now had more "chronics" on their hands. Canada reported difficulty in keeping some sanatorium beds filled, but an increased attendance at out-patient departments.

Statistics of mortality and Mantoux conversion showing a shift of the peak mortality from tuberculosis, as well as the time of the primary infection towards the higher age groups, were universally supported.

In all civilized countries the rate of mortality from tuberculosis is now higher in men than in women.

The Necessity of Modifying Antituberculosis Programmes.

The necessity for every country to be constantly modifying its own programme to meet the conditions locally pertaining was the main theme. Certain interesting facets were displayed.

Prophylaxis.

Dr. Long, of the Henry Phipps Institute, was reported to be starting a large-scale experiment on isoniazid prophylaxis in child contacts of chronic sufferers.

Treatment of Mantoux converters along the lines suggested by Waring (*Dis. Chest*, 1954, 25:361) is apparently not being extensively used. It has the disadvantages of not being able to be combined with B.C.G. and of requiring frequent Mantoux tests. Blanco (Spain) hopes to be able to produce a depot tuberculin which will remain in the skin for prolonged periods and give a warning signal when infection occurs.

B.C.G. was not extensively discussed, but two (at least) of the short reports recorded cases of progressive lesions in infants due to B.C.G. However, B.C.G. vaccination was widely supported by the Canadians and Scandinavians for the groups at special risk.

Possible Modifications of the Administrative Programme.

Every one is agreed that, for the present, there should be no reduction in expenditure on tuberculosis control programmes. Never before has such a favourable opportunity offered itself of bringing the disease under control. In fact, with victory near at hand, a little more effort may win the day. The increased cost of antibiotic and surgical treatment was generally appreciated. The cost of case-finding is, of course, also considerable.

Legal restriction on the indiscriminate use of antibiotics and chemotherapy was not felt to be desirable, but it was rather preferable for the International Union Against Tuberculosis and similar bodies to issue frequent bulletins to physicians and phthisiologists on the general rules of treatment of various forms of tuberculosis. In the Argentine 62.7% of patients presenting to the university clinic were deemed to have been improperly and/or inadequately treated with antibiotics and chemotherapy.

Possible Modifications of Medico-Social Aspects of the Programme.

Early diagnosis by mass miniature radiography and Mantoux testing was again stressed, particularly in the light of rapidly accumulating evidence of the great efficacy of antibiotics and chemotherapy on early lesions and its less certain effect on chronic lesions.

Many countries have developed excellent domiciliary services for the treatment of patients awaiting hospital admission and those who may never, in fact, be admitted.

In general there has been little change in the medico-social programme.

The final discussion centred on whether different types of institutions from those commonly in use should be organized.

The obvious value of centres for treatment of meningeal and osseous and other special forms of tuberculosis was agreed upon, as also was the provision of special centres for tuberculous diabetics when finances allowed.

It was suggested that the most economical method for treating the general mass of subjects of pulmonary tuberculosis would be to divide patients into three categories: (i) Those with disease in the early stages. Most of these can have rest and antibiotics and chemotherapy at home or in a centre for the treatment of such patients, where the occasional temporary collapse can be induced, bronchoscopy carried out and so on. Very few of these centres may be necessary and the turnover should be quick. (ii) Those requiring surgical treatment. These should be treated in modern chest hospitals (sanatoria) with adequate surgical facilities. It is here that most of the financial load on the community will be incurred. (iii) Those with chronic disease. It was widely agreed that it was undesirable to mix these patients with the former group and also with the general population. This group may be increasing. The bad effect on patients in groups (i) and (ii) of some "chronics" with no desire to get better can be a great problem. The ability of antibiotics and chemotherapy to check relapses and to allow stupid patients to get away with "breaking the rules" may have a disastrous effect on other patients taking the cure "the hard way".

There was general agreement on the value of special centres for these patients, where finances permitted.

In general the well-established measures of the control of the disease were reaffirmed, and no major alterations were suggested.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

MEDICINE.¹

[From the *Sydney Herald*, October 23, 1834.]

To the Editors of the Sydney Herald.

Gentlemen,

You will oblige me if you will give insertion to the following in your valuable Paper:

As I am one of those few junior Medical Practitioners who gain a comfortable living by their practice and as I consider my future success in this way as now certain, I am willing that some who have been less successful than myself may be acquainted of the plan by which I have gained the public confidence. At my first outset in life I suffered at knowing only medical Practitioners of my own age and standing. I made it my study, and success attended my endeavours in getting into the good graces of a certain leading man in the profession, but a vain, ambitious and would-be learned man, a character entirely suited to my views. By flattery and incense well applied I soon got hold of his right hand. Since then I have been called, at least to two out of every three cases of inquests that have been held in Sydney and its neighbourhood, and on some of these occasions I have been so fortunate as to be honored with a seat in the Coroner's chaise. I have also attended the above-mentioned medical gentleman at more operations than one—circumstances of no little importance to a junior member of the profession; for the public observing that I was on such intimate terms with such men as the Doctor and the Coroner, concluded that I was a young man of no ordinary talent and assiduity. How far this conclusion is right or wrong is of little consequence to me, while I have one who can extricate me out of any scrape into which my own thoughtlessness or ignorance might lead me. I need very little care about the opinion of the rabble, which can be obtained in a favourable light to me at any time by the

¹From the original in the Mitchell Library, Sydney.

influence of my friend's oratory, who depends entirely upon this class of Society for the support of his own views, for whatever he says to them is law and like the Agitator O'Connell he seldom fails of success before such a tribunal. Cultivate then the friendship of this man: attend all places of public resort: be also fashionable in your religion: be seen at St. James Church, Independent Chapel etc., but never go if you happen to be a Presbyterian or Wesleyan, above once a quarter to either of those two places of worship for the people in those places will not be gulled by false appearances: attend the theatre and other places of amusement, such as cock fights, man-fights, wife fights &c and you may depend upon success in your profession: but never let your conscience get the better of you, or else you will be ruined in this world forever: put off religious feeling as long as you can, and think within yourself that there will be sufficient time allotted you for your repentance after you have made your fortune. Such is the plan that I have pursued and will pursue, and which I now recommend to all those who wish to gain the confidence of the public.

I am,
Yours, &c.,
CAUSTIC.

P.S.—At all public meetings have a friend or two to propose you as one of the Committee, if a Committee should be required, for this you know cannot be done without some eulogium on your character.

Correspondence.

CORTISONE.

SIR: I have this week received from the British Medical Association notice from the Deputy Director of Health that cortisone is available now as a pharmaceutical benefit, but only as a "life saving" measure. When it was placed on the list of pharmaceutical benefits for *status asthmaticus*, it was agreed between myself and the Deputy Director of Health, Adelaide, that, in the absence of any specific direction as to the meaning of that term, cortisone would be available to my patients as a pharmaceutical benefit in the terms of the representation made by the Association of Allergists to that end. This involved the recognition of the existence of permanent crippling asthma as chronic *status asthmaticus* and that sufferers from this condition should receive the benefit. This arrangement is now obviously at an end.

The reason apparently is that too much money is being spent on it. As the prime mover in the Association to obtain this concession and as the argument was based on economic as well as humanitarian lines, I feel that I must enter the discussion once more, and I think that the matter must be ventilated in your columns as it is a matter of importance to all physicians and general practitioners, and I rather suspect that certain fundamental principles are involved. During the period I have had 27 permits for 18 patients and between the issue of the first and last permit over 167 patients; so presumably about 180 permits have been issued.

A review of these patients shows that only two permits can be classed as "life saving", but that is because asthma rarely kills. There are five children, all permanent asthmatic cripples with deformed chests and spoiled lives, all restored to normal and beautiful health and activity by the magic of cortisone. There are two women whose permanent crippling asthma is arrested by the use of cortisone for about a week at menstruation. There is a young woman who was barely able to live as a social animal before we gave her cortisone and has since married and is a radiant housewife. Two wage earners are back at work after months of total disability and having desensitization treatment at the same time. Three elderly women have returned to useful activity and ceased to be a drain on their families. One is a psychotic asthma, suppression of whose symptoms is most necessary while his affairs spiritual are adjusted (he is now getting his cortisone from the public hospital for two shillings). One is a foreign woman who panics and who cannot be reassured because of the language difficulty, and one a mother of young children severely disabled for two months of the year by grass pollen asthma, resistant to desensitization.

In my practice no patient is put on cortisone until it is quite proven that all other methods have failed, and no patient is put on it unless the asthma is either dangerous or crippling. Cortisone is regarded as a hostile and

dangerous substance and is not advised except after much trying and very mature consideration. Others may use it more lightly; but if the recommendations of the Allergists' Association had been followed that cortisone should only be available after consultation with an approved physician and on certification that all other means of treatment had failed, it would have been impossible for any abuse to have arisen, if it is considered that abuse there has been. The average cost of these persons to the Government has been about £5 per month. Each of them has been converted from a drain on others and on the community to an actively producing member of it. Each of them is a potential pensioner, and each of them if continuing his asthma is likely to cost the State a great deal in medical benefits as well as other pharmaceutical benefits. If 180 permits had been issued during the four months under consideration, then it is fair to assume that 540 would be issued during the year. These permits should render the Government liable for about £10 each, maybe £12. This means £6000 a year in South Australia or £66,000 for the Commonwealth. Most of them will require episodic life-saving cortisone, and some will get maintenance cortisone through public hospitals. The total saving on cortisone is not likely to be more than £40,000, a fleabite in the huge sum that is spent under pharmaceutical benefits administration annually. Against this £3700 in South Australia is to be set the credit of five normal children and thirteen people producing a basic wage worth each week, instead of consuming the time and emotion of others and a considerable amount of hospital, medical and pharmaceutical benefits.

That is the economic side of the story; now for the human side. It is true that most of these people will get cortisone. Husbands will buy it for their wives and give up the dream of homes of their own; parents will buy it for their asthmatic children—having already spent small fortunes on them—and penalize their whole family's prospects for the sake of one. Widows who will not take charity will starve to buy it, and breadwinners will commit suicide because they see no way out; meanwhile the chronic cardiacs, the diabetics and all the others can consume unlimited amounts of pharmaceutical benefits without any hindrance, and the pensioner can have practically anything he likes. Many of these people offer no hope to the State of economic return. Humanly speaking this matter is a gross injustice, and politically it is a sectional discrimination such as is quite intolerable under democracy.

Most asthmatics are amenable to inhibitive treatment of some sort. But everyone will admit that there is a certain class for whom no pre-cortisone treatment is of any avail; Sutherland, of Melbourne, of vast experience, says it is 6% of all asthmatics. Most of these are manageable with the ordinary medicaments, but there is a certain residue who live the half-life of asthmatic cripples. They are a special class, and the best name for their dreadful disease is malignant asthma, and their only hope is in cortisone. Humanity alone demands that these people shall have the same rights as other sufferers from malignant disease "under the Act", but when it is so demonstrable that economics demands it, too, surely to God they must.

Yours, etc.,
CYRIL T. PIPER.

163 North Terrace,
Adelaide,
December 23, 1954.

PROBLEMS WHICH SURGEONS CREATE FOR ANÆSTHETISTS.

SIR: In the very first sentence of his letter, which appeared in your issue of January 8, 1955, Dr. B. M. Dwyer exposes himself most certainly to the charge of psychic projection—the device of accusing another of his own weakness. That one of less than two years' standing as a graduate should begin his professional career possessed of such delusions as Dr. Dwyer apparently harbours is a sad reflection on his medical training and a grim threat to his future patients, some of whom must surely die in order that he gain wider experience and understanding.

The statistical guesswork indulged in by Dr. Dwyer would be ludicrous if it did not contain this germ of tragedy. It is sheer nonsense for him to imply that the practice of specialized anaesthetics is of minor significance in medicine. On the contrary it is of vital importance, for in recent years it has enormously widened the scope of surgery and ensured the survival of thousands of patients who otherwise would have died either unrelieved or during operation. Admittedly, and like all doctors, trained anaesthetists will do silly things

from time to time, but they are really far less hazardous than many of the practices (and I do mean "practices") frequently indulged in by the conceited and ignorant. That Dr. Dwyer has seen things that would cause the hapless specialist to be run out of town suggests that he has failed to understand what was being done. Perhaps this is why he indulges in musical irrelevancy and economic illogicalities.

For Dr. Dwyer's information I would state that the title of my paper was not chosen by me, so his protest must be directed elsewhere. And if its format was distasteful to him, may I inquire what is wrong with a workers' compensation claim that is genuine?

Indeed, I do have a deep-seated feeling of inadequacy in this matter: that of having failed to promulgate teaching that would turn out doctors better informed about anaesthetics than Dr. Dwyer seems to be.

Yours, etc.,

S. V. MARSHALL.

143 Macquarie Street,
Sydney,
January 13, 1955.

THE NATIONAL HEALTH SCHEME.

Sir: Nobody will deny that the national health scheme is rapidly proving to be of great benefit to the community and—as far as my knowledge of European countries goes—is definitely better than all the older European health schemes. However, all these schemes have been initially hailed in their early stages (except perhaps in Great Britain) and have only become a nuisance to doctor and patients after many years of "development", meaning alterations under rather political than reasonable pressure.

One of these "developments" likely to take place, once a good start has been made, is the pegging of fees. Naturally fees are determined by the business risk, the running cost, the general cost of living, competition (rising number of graduates after financial hurdle taken out of the medical course), the special economic situation of the patient population and the doctor's own estimation of his particular effort. As the medical profession must carry its own business risk, so must the insurance and the public, as long as there is no pegging of fees. As soon as the fees are fixed by a schedule, the insurance has this risk off its shoulders and the risk of the entire expenditure involved, rising costs *et cetera* are entirely on the back of the medical practitioner. As a matter of fact, by this method the income of the general practitioner in Germany (1950) has been calculated as less than that of an unskilled worker. Any persons discussing such fixed schedules should carefully study its effects in other countries and not in the United States of America alone, where they have not been introduced long enough.

The perhaps oldest national health scheme is the German one, and since the Prussian order of fees was introduced by the Bismarck administration at the end of the nineteenth century, this schedule has been copied and modified all over the world. The "Commonwealth Benefit" schedule as well as the "Schedule G" are quite closely resembling this old order of fees. The approach is entirely mechanistic, rewarding mainly manual activities. Surgical procedures are listed in detail, and while "catheterization of the bladder" is listed with £1 10s., the first examination of a patient, including taking a full history, domestic and social as well as family background, symptom analysis, full examination, planning of treatment and commencement of treatment (if not the entire treatment), is rewarded with 6s. There is no mention of domiciliary visits in the Commonwealth benefit list or of the time factor involved in such activities. Where mileage is concerned, no mention is made whether such mileage has been travelled in first or second gear over muddy country roads or on the tarred surfaces around the cities, or whether rivers must be crossed on time-consuming, half-broken-down ferries connecting townships otherwise less than two miles apart. No mention is made whether or not patients have been sticking to surgery hours and what extra expenditure is involved living in a country district, where all the small items of life, electricity, groceries *et cetera*, cost more than in the cities.

With other words, the fee schedules tend to deplete of doctors the areas of primary production and tempt the doctor to perform numerous surgical procedures, as "brain", not involving manual activities, is not paid. No higher degree surgeons are available in country districts as a rule. The scarcity of doctors in American country districts is well known. Present fee schedules with their late nineteenth century outlook will crowd doctors in the cities, in big

industrial centres, where history and examination can be kept at a minimum, the slightest difficulty sent to a specialist, and where the very number of patients passed through the mill, must make up for the deficiencies in the fee schedule. Conditions in various areas are also too different to allow generalized fixation of fees without detriment to the service rendered.

I find it dangerous to ask "leading members" of the profession for their opinion in this respect. "Leading members" are usually city dwellers, highly specialized in one field and too many years off the changed conditions of general practice as they present today.

Any authority which fixes fees must also take the responsibility of paying the doctors' running cost and cost of living. Then doctors would be public servants on a salary and no longer an independent profession.

Yours, etc.,

COUNTRY PRACTITIONER.

January 11, 1955.

Obituary.

JOHN HOWARD LIDGETT CUMPSTON.

DR. JOHN HOWARD LIDGETT CUMPSTON, a great Australian who had created the Commonwealth Department of Health and had nurtured it and protected it over many years and through difficult times, died suddenly at his home at Forrest, Canberra, on Saturday, October 9, 1954. He was seventy-four years of age.

When Cumpston retired from the position of Director-General of Health of the Commonwealth on June 18, 1945, we stated in a leading article in this journal that the event might be looked on as marking the end of an epoch in the history of public health medicine in Australia. On that occasion, the opportunity was taken to review much of the history of the Department of Health, and no apology need be offered if some of the ground is covered again in this notice.

Cumpston was born in Melbourne seventy-four years ago into a home in which the teachings of John Wesley formed the pattern of family life. He learnt from his parents the importance of service to one's fellow man. Cumpston's mother was a worker in many philanthropic and social spheres, and from her he absorbed much of what he reflected in later life in his own service to humanity. Living at Box Hill, a suburb of Melbourne, he went to New College, an institution founded by two Oxford graduates who not only taught their pupils essentials of normal schooling, but discussed with them each day some aspect of local, national or international activity. Cumpston said in later life that it was this which helped to awaken his interest in Australia. From New College he went to Wesley College and from there to the University of Melbourne in 1898. From 1899 to 1902 he lived at Queen's College, and while he was resident there he won the College annual essay prize with a contribution entitled "The Future of Australia". After graduation, Cumpston became a resident medical officer at the Melbourne Hospital where he stayed for a year, and then after acting as *locum tenens* in several practices, he entered the mental hospitals service for a short time and was stationed at Parkside Mental Hospital. In 1905 he went as ship's surgeon to Japan. The ship called at Manila, where he had an opportunity to see at first hand the great achievements of the American public health service in the control of disease. Here he saw what had been done by Victor Heiser and Strong in the elimination of cholera and smallpox. These two diseases had been rampant in the Philippines in the year 1900. Victor Heiser was to play an important role later on in the creation of the Commonwealth Department of Health, but it has been stated that contact with the disease problems of Asia in the Philippines persuaded Cumpston that every effort should be made to keep Australia free from the contagious diseases of the East. In 1905 he went to London, where he obtained the Diploma of Public Health and spent a year as resident medical officer at an infectious diseases hospital. It was while he was at this hospital that Charles Martin, head of the Lister Institute, extended the laboratory facilities of the institute to Cumpston. Working at both the hospital and institute, he studied scarlet fever and diphtheria, seeking a possible relationship between the two conditions. For this work he was awarded the degree of Doctor of Medicine of the University of Melbourne. In 1907 Cumpston visited the Pasteur Institute in Paris, he went to Lille to spend a day with Calmette, he attended the International Conference on

Infant Welfare in Brussels and then attended the International Conference on Hygiene in Berlin. Here he met the leading investigators of the day in bacteriology, hygiene and public health. Clearly, he had chosen the sphere of his future work and was fitting himself for what lay before him.

In 1908 Cumpston returned to Australia. When the ship arrived at Fremantle, he called at the Health Department in Perth and was at once offered a position. He remained there until 1911, when he joined the Commonwealth Quarantine Service. In 1913 he was appointed Director of Quarantine. The *Quarantine Act, 1908*, was the only means by which the Commonwealth was able to take any part in the control of public health in Australia. Certain matters are mentioned in the provisions of the Act in respect of which the Commonwealth can enter into arrangements with the State Governments to aid them in carrying out the Act. Cumpston had not held office very long when an epidemic of smallpox occurred in New South Wales in 1913. Up till that time little if any joint action had been taken by the Commonwealth and State medical officers in public health



affairs. Nothing but satisfaction can therefore be felt at the reflection that the collaboration inaugurated by the Commonwealth at that time in regard to one epidemic has advanced to its present state when the usual exchange in plans for common advancement to health are discussed at regular intervals. The next events which brought the Commonwealth prominently into the public health picture occurred in 1918 and 1921. In 1918 the influenza pandemic reached Australia, and quarantine measures became of the utmost importance. When the outbreak of plague took place in 1921, the Commonwealth Department of Health had been instituted. The Department was brought into being in a way which may be recalled with advantage. The history was set out in a leading article in this journal on February 12, 1921, in the following words:

The story of the formation of the new department is bound up with the activities of the Rockefeller Foundation. Dr. Victor G. Heiser, Director for the East of the International Health Board of the Rockefeller Foundation, has recently visited these shores. He and his colleague, Dr. W. A. Sawyer, who is the Senior State Director of the same Board, and who is well known in connexion with the control of the Australian Hookworm Campaign, have held several conferences with the Prime Minister and other representatives of the

Commonwealth. Dr. Heiser stated that his institute was desirous of further promoting its activities in Australia, and declared his intention of recommending to the institute that it place at the disposal of the Commonwealth the services of three investigators with special qualifications—one a specialist in industrial hygiene, the second a specialist in tropical hygiene, and the third a specialist in sanitary engineering. He made this offer contingent upon an agreement by the Federal Government to coordinate its health activities with those of his institute in Australia and to create a special Department of Public Health. At the same time, he suggested that the institute might later on lend to the Government an expert organizer of laboratories of preventive medicine. The Federal Ministry decided to accept the offer and to create a new department for the purpose of expanding the existing activities of the Federal Quarantine Service and of undertaking such other tasks as may be regarded as federal.

Up to the time of the foundation of the Department of Health, the Director of Quarantine had been an officer of the Department of Trade and Customs. In the *Commonwealth of Australia Gazette* of March 19, 1921, there appeared an announcement appointing Dr. J. H. L. Cumpston to the newly created position of Director-General of Health and Director of Quarantine, Administrative Division, Department of Health, from March 7, 1921. The functions of the Department of Health as stated at the time of its establishment are as follows:

The administration of the *Quarantine Act*.

The investigation of causes of disease and death, the establishment and control of laboratories for this purpose.

The control of the Commonwealth Serum Laboratories and the commercial distribution of the products manufactured in those laboratories.

The methods of prevention of disease.

The collection of sanitary data and the investigation of all factors affecting health in industries.

The education of the public in matters of public health.

The administration of any subsidy made by the Commonwealth with the object of assisting any effort made by any State Government or public authority directed towards the eradication, prevention or control of any disease.

The conducting of campaigns of prevention of disease in which more than one State is interested.

The administrative control of the Australian Institute of Tropical Medicine.

The administrative control of infectious disease amongst discharged members of the Australian Imperial Forces.

Generally to inspire and coordinate public health measures.

Any other functions which may be assigned to it.

One of Cumpston's first cares on taking up his duties in the wider departmental sphere was to try to secure the cooperation of the practising members of the medical profession. He wrote to the Federal Committee of the British Medical Association in Australia and suggested that he should meet the committee when it was in session for the purpose of discussing the best means of carrying out the policy of the Ministry for the prevention of disease. In a comment on this, a leading article in the issue of this journal for July 30, 1921, stated that it was a step of great significance that the permanent official head of the department should seek the collaboration of the medical profession through the agency of the Federal Committee. In the issue of August 6, 1921, on page 110, an account of Cumpston's discussion with the Federal Committee will be found. He explained to the Federal Committee that it was the policy of the Commonwealth Department of Health to keep in close touch with the medical profession as a whole. He himself had recognized at an early stage that the only method of carrying this policy into effect would be to approach the Federal Committee and to constitute a formal association with that committee. He thought that the public health bureaucrat in the past had proceeded from wrong lines in the vain attempt to administer the public health laws without the collaboration of the medical profession. When members of the Federal Committee discussed the advisability of the taking over by the Federal Department of Health of the complete control of public health from the States, Cumpston pointed out that such a change would involve an alteration of the Australian Constitution.

Sir Henry Gullett, writing in *The Herald* (Melbourne) on February 25, 1939, in discussing Cumpston, wrote: "If he aims at the unification of the Commonwealth he has never said so. On the contrary, he gives the impression of disinterestedness, aiming as a scientist at the prevention of disease and death from accidental causes and the advancement of the health of the people." Commenting on this in June, 1945, we remarked that this was a fine tribute from a prominent layman, and we added that whether Cumpston had had a motto in the conduct of his department was not known, but since a man was judged by his works it was probably: "First, for Australia." The policy of the department all along the line, as far as outsiders could judge, was the utilization of Australian scientific resources to promote the health and efficiency of the Australian nation.

When the Commonwealth Parliament appointed the Royal Commission on Health which took evidence throughout Australia in 1925, further advances were made which were seized upon with avidity by the Commonwealth Department of Health. The full report of this Commission was published in *THE MEDICAL JOURNAL OF AUSTRALIA* on January 16, 1926, and it is important to note that practically every recommendation made by the Commission received the attention of the Department of Health. For this, of course, Cumpston was responsible. The Commission recommended the appointment of a Federal Health Council and of a Medical Research Council. The Federal Health Council met for some years and was the forerunner of the National Health and Medical Research Council, which is meeting at the present time twice a year.

Cumpston's work was not all plain sailing. Immediately before the financial depression, the department was carrying on its activities in several divisions. There were divisions of marine hygiene, tuberculosis, venereal disease, epidemiology, laboratories, tropical hygiene, industrial hygiene, public health engineering, veterinary hygiene and quarantine. During the depression, the Government of the day tried, for reasons of economy, so it stated, to curtail in a very drastic fashion the activities of the Department of Health. Full details of the proposed curtailment were, as far as we know, not made public. But we do know that the Director-General resisted the proposals with every means in his power. Those who used to meet him at this time will remember what a worried man he was. Cumpston's resistance was made in the interests of Australia and to prevent the dissipation of a staff of officers who had been trained to serve the country. Later on, when some of the "divisions" of the department disappeared and their heads had to be placed in other positions, Cumpston did not give way to discouragement and relax his endeavours as a lesser man might have done. He began once more, to his lasting credit, to reconstruct his department to carry on his public labours.

Reference to Cumpston's work would not be complete without the naming of the Commonwealth Serum Laboratories as an expansion of the Calf Lymph Department, the School of Public Health and Tropical Medicine at the University of Sydney, and the Commonwealth X-Ray and Radium Laboratory. Medical practitioners will also recall the series of cancer conferences held every year at Canberra; Cumpston was the life and soul of these gatherings. As a chairman, he was superb. During the war, Cumpston was chairman of a committee which prepared for publication as supplements to this journal a series of articles on wartime medicine and surgery. He contributed an article to the first issue of this journal on July 4, 1914, and described the history of medical journalism in Australia. This article was republished in our Silver Jubilee Number in 1939.

Throughout his life Cumpston was a widely read student of literature. Among his favourite authors were Kipling and Carlyle. After his retirement he wrote monographs on Cromwell and Milton, but did nothing with them. Then he turned his attention to a series of histories. The first that he wrote was on Sturt; this was published by the Georgian Press. The second on Sir Thomas Mitchell is being published by the Oxford University Press. The third on Gregory has not yet been offered to a publisher. He wrote a large work entitled "The Health of the People", and it is earnestly hoped that this will see the light of day as it is a particularly valuable document. He also wrote a volume on the history of Australian discovery.

Cumpston was interested in kindergartens and was largely responsible for the deflection of the £100,000, which Lady Gowrie persuaded the Government to give to the kindergarten movement, to the establishment of the Lady Gowrie Centres. It is probably fair to say that without Cumpston's intervention this money would have been divided amongst the States, who would have used it to augment their funds,

and there would not have been the tangible result which has without doubt accrued from the establishment of the Lady Gowrie Centres. In this regard, it has been pointed out by a member of his family that Cumpston's mother herself conducted what was probably the first kindergarten in Australia; this was in association with the Methodist Church movement in a Melbourne suburb.

It is natural at this stage to ask what manner of man Cumpston was. A senior member of the profession who was in a position to know, pointed out in 1945 that Cumpston had contrived to combine width of vision with an unusual capacity for detail, and moreover that he was a man who could dream and not make dreams his master. He was able to grasp opportunities, even as he was able to maintain his grip during the stormy episodes of the financial depression. Throughout his long service to the Commonwealth he maintained the dignity of the profession and insisted that medicine should take its vital place when others held opposite views. He was so extremely thorough himself that he was somewhat intolerant of inefficiency in others, particularly when that inefficiency arose through laziness or lack of effort. He could recognize and appreciate fixity of purpose and strength of principle in others. His colleagues have stated that the fact that he had grown up with the department and knew its history and the details of every project and transaction tended to make him impatient with his assistants. He was a hard man, but we believe that he was fair. He found it somewhat difficult to delegate responsibility and authority. It is unfortunately true that some of his staff who had to work in close association with him were far from happy, and the fault did not always lie with them. As a public servant, Cumpston must stand high in the annals of Australian history. On his retirement, we declared that it could be claimed that while he met the needs of the present, he had built on solid lines for the future and had earned the gratitude of the Australian people. Now, as then, we can conclude with the statement that he was one who could say with Wordsworth:

Enough, if something from our hands have power
To live, and act, and serve the future hour.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Additions to the Post-Graduate Film Collection.

The Post-Graduate Committee in Medicine in the University of Sydney announces that the following films have been purchased from the American Cancer Society under its special Cancer Education Grant from the New South Wales Cancer Council; they have been added to the committee's film collection and are now available on loan:

- "Uterine Cancer: Problem of Early Diagnosis" (16 millimetres, colour, sound, 20 minutes).
 - "Hormonal and Chemical Treatment of Cancer" (16 millimetres, colour, sound, two reels, 73 minutes).
 - "Warning Shadow" (16 millimetres, colour, sound, 19 minutes).
 - "Oral Cancer: Problem of Early Diagnosis" (16 millimetres, colour, sound, 33 minutes).
 - "Cancer of the Lung" (16 millimetres, colour, sound, two reels, 73 minutes).
 - "Exfoliative Cytologic Method in the Diagnosis of Gastric Cancer" (16 millimetres, colour, sound, 23 minutes).
 - "Tumours of Childhood" (16 millimetres, colour, sound, two reels, 80 minutes).
- The following films have also been added:
- "The Mechanism of Swallowing" (16 millimetres, black and white, silent, donated by Kodak, Australasia, Proprietary, Limited).
 - "Bronchography" (16 millimetres, black and white, sound, 45 minutes, on loan from British Council).

Lecture at Balmoral Naval Hospital.

The Post-Graduate Committee in Medicine in the University of Sydney announces that Dr. J. C. Fitzherbert will give a lecture on "The Management of Major Injuries of the Hand" at 2 p.m. at the Balmoral Naval Hospital on Tuesday, February 8, 1955. Clinical cases will be shown

after the lecture. All members of the medical profession are invited to attend.

Courses for Diplomas in Diagnostic and Therapeutic Radiology.

Part I courses for the diplomas in diagnostic and therapeutic radiology of the University of Sydney will begin in Sydney on March 21, 1955, for a period of eight months. Those interested in enrolling for either of these courses are asked to communicate with the course secretary of the committee, 131 Macquarie Street, Sydney, from whom particulars may be obtained.

Course for Part I, Diploma in Psychological Medicine.

Those interested in enrolling for a Part I course for the diploma in psychological medicine which is likely to begin on March 21 for a period of eight months are requested to communicate with the course secretary, The Post-Graduate Committee in Medicine, 131 Macquarie Street, Sydney, as soon as possible. Telephones: BU 4497-8. Telegraphic address: "Postgrad, Sydney."

THE MELBOURNE MEDICAL POST-GRADUATE COMMITTEE.

PROGRAMME FOR MARCH, 1955.

Classes for Higher Qualifications at University Departments.

CLASSES in anatomy for candidates for the M.S., D.G.O., D.O., D.L.O., D.P.M., D.D.R., D.T.R., D.A., Primary F.R.A.C.S. and Part I of D.C.R.A. will be held at 2.15 p.m. on Mondays and Wednesdays, from February 28 till July, at the Anatomy Department.

Classes in physiology for candidates for the M.D., M.S., D.G.O., D.O., D.L.O., D.P.M., D.D.R., D.A. and Primary F.R.A.C.S. will be held at 3.45 p.m. on Mondays and Wednesdays, from February 28 till July, at the Physiology Department.

Classes in pathology for M.D. candidates, and as a basic course for candidates for Part II of the M.S. and the diplomas and M.C.R.A. will be held at 1.45 p.m. on Mondays and Wednesdays, from February 28 till July, at the Pathology Department.

Classes in physics for candidates for the D.D.R., D.T.R. and D.C.R.A. will be held at 4 p.m. on Thursdays from March 3 till July, at the Commonwealth X-Ray and Radium Laboratory.

Enrolments should be made with the Post-Graduate Committee by February 15. The fee is £15 15s. per subject, except for the D.O., when it is £17 17s. for physiology and £17 17s. for anatomy. The fee for Part I D.D.R. is £31 10s.

Course in Surgery at the Royal Melbourne Hospital.

The honorary surgical staff of the Royal Melbourne Hospital will conduct a course in surgery suitable for candidates for senior surgical qualifications, commencing on March 21. Classes in clinical surgery will be held on Monday, Tuesday, Thursday and Friday afternoons, from 4 p.m. till 6 p.m.

Permission will be obtained for all members of the class to have access to the operating theatres and general surgical work of the hospital. The fee for the course is £5 5s., and enrolments should be made through the Melbourne Medical Post-Graduate Committee.

Psychiatry for D.P.M.

The Victorian Mental Hygiene Authority will provide a course in psychiatry, commencing on February 28, 1955, and continuing for about five months. This will consist of two sessions per week from 4 p.m. to 6 p.m., which will be held mainly at the Royal Park Receiving House. Inquiries should be addressed to the office of the Mental Hygiene Authority, 300 Queen Street, Melbourne.

Overseas Lecturers.

From March 1 to 4 Dr. Peter Kerley, C.V.O., C.B.E., M.D., F.R.C.P., F.F.R., of London, will visit Melbourne. He will give the following lectures, at 8.15 p.m., in the Lecture Hall of the Royal Australasian College of Surgeons: Tuesday, March 1, "Pulmonary Fibrosis"; Thursday, March 3, "Lung Changes in Congenital and Acquired Heart Disease". Dr.

Kerley will also visit radiological departments at the Royal Melbourne, Alfred, Saint Vincent's, Austin and Repatriation General Hospitals. He is noted for his work on the radiology of the thorax and is co-author of a well-known text-book of radiology. The fee for each of the above lectures will be 15s., but those who have paid an annual subscription to the Post-Graduate Committee may attend without further charge.

On March 21, under the auspices of the Australian Association of Anaesthetists (Victorian Branch), Dr. John Gillies, C.V.O., M.C., M.D., F.F.A.R.C.S., of Edinburgh, will give an open lecture to the medical profession in the Lecture Hall of the Royal Australasian College of Surgeons at 8 p.m.

On March 24 Dr. Richard Kern, M.D., Professor of Medicine, Temple University, Philadelphia, United States of America, will lecture in the Medical Society Hall at 8.15 p.m. on "Our Growing Responsibilities to the Aged in Our Midst". Dr. Kern is noted for his work in geriatrics and allergy. The fee for this lecture is 15s., but those who have paid an annual subscription to the committee may attend without further charge.

Country Courses.

Mooroopna.

At Mooroopna on Saturday, March 19, Dr. Stanley Williams will lecture on "Failure to Thrive" and Dr. Kate Campbell on "Neonatal Disorders". Dr. B. R. Schloeffel, Maud Street, Shepparton, is the local secretary.

Warracknabeal.

At Warracknabeal on Saturday, March 26, Dr. J. G. Hayden will lecture on "Management of Hypertension", Dr. John Cloke on "Chronic Back Pain" and Dr. J. B. Curtis on "Subarachnoid Haemorrhage". Dr. J. J. Searby, Hilden, Warracknabeal, is the local secretary for this course.

Fees.

Fees for country courses are at the rate of 15s. per lecture, but those who have paid an annual subscription to the committee may attend without further charge.

Enrolments.

Enrolments for all courses and lectures detailed above, except the psychiatry course and the lecture by Dr. John Gillies, should be made with the Melbourne Medical Post-Graduate Committee, 394 Albert Street, East Melbourne, the application to be accompanied by the fee.

ROYAL PRINCE ALFRED HOSPITAL.

The following seminars, open to all members of the medical profession, will be held from 1.15 p.m. to 2.15 p.m. in the Scot Skirving Lecture Theatre, Royal Prince Alfred Hospital, Sydney: February 18, thoracic section, "Middle Lobe Syndrome" (Dr. M. R. Joseph); February 25, cardio-vascular section, "Hypothermia and the Surgery of Atrial Septal Defect" (Mr. F. H. Mills); March 4, endocrinology and metabolism section, "Recent Research in the Physiology of Oestrogens" (Professor C. W. Emmens, Professor of Veterinary Science, University of Sydney—by invitation); March 11, haematology section, "Coagulation Defects" (Dr. C. Reed); March 18, allergy section, "Principles of Diagnosis and Treatment of Allergic Disorders" (Professor Richard A. Kern, Professor of Medicine, Temple University, Philadelphia—by invitation); March 25, radiology and cardiology sections, "Pulmonary Changes in Congenital and Acquired Heart Disease" (Dr. Peter Kerley, Westminster Hospital, London—by invitation); April 1, neurology section, "The Problem of the Paraplegic" (Dr. J. Allsop, Mr. R. A. Money); April 15, gastro-enterology section, "Some Aspects of Gastric Secretion" (Dr. B. Billington); April 22, thoracic section, "Modes of Presentation of Bronchial Carcinoma" (Dr. H. M. Rennie); April 29, cardio-vascular section, "Some Aspects of Pulmonary Function in Heart Disease" (Dr. K. Cotton); May 6, endocrinology and metabolism section, "Total Adrenalectomy" (Dr. T. M. Greenaway); May 20, haematology section, "The Clinical Aspects of the Rh Factor" (Dr. R. Walsh—by invitation); May 27, neurology section, "Recent Trends in Treatment of Trigeminal Neuralgia" (Dr. S. Nelson, Mr. D. Miller—by invitation); June 3, gastro-enterology section, "Clinical Assessment of Surgical Treatment in Pancreatitis" (Mr. K. Starr—by invitation); June 10, thoracic section, (a) "Spontaneous Pneumothorax" (Dr. G. L. McDonald), (b) "Scalene Lymph Node Biopsy" (Dr.

Cotter Harvey); June 17, endocrinology and metabolism section, "Biochemistry of Insulin Activity" (Professor J. Stull, Professor of Biochemistry, University of Sydney—by invitation); June 24, paediatrics section, "Intersexuality" (Dr. W. Cary), to be followed by a clinical meeting at 4 p.m. at the Royal Alexandra Hospital for Children, Camperdown.

The Royal Australasian College of Physicians.

EXAMINATION FOR MEMBERSHIP.

INTENDING CANDIDATES for the membership of The Royal Australasian College of Physicians are reminded that the closing date for the receipt of applications for the next examination is Friday, February 25, 1955. The written examination will be held in capital cities on Saturday, March 26, 1955, and the clinical examination will be held in Sydney from approximately Friday, May 6, to Tuesday, May 10, 1955. Application forms may be obtained from the Honorary Secretary of the College, 145 Macquarie Street, Sydney.

Royal Australasian College of Surgeons.

ALAN NEWTON PRIZE.

In 1951 the sum of £1042 was subscribed to provide a prize to recognize the services to the Royal Australasian College of Surgeons of Sir Hibbert Alan Stephen Newton, Kt., a Foundation Fellow and, later, a President of the College. This sum of money has been invested in authorized trustee investments and the interest used to provide a prize for essays on practical surgical subjects.

The prize is to be awarded under the following conditions:

1. The Alan Newton Prize shall be awarded biennially.

2. Candidates for the prize shall be Fellows of the Royal Australasian College of Surgeons (not being members of the Council), the Royal College of Surgeons of England, the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons in Ireland or Fellows in Surgery of the Royal Faculty of Physicians and Surgeons of Glasgow.

3. Essays must be typewritten in English and not to exceed 75,000 words. Case histories of cited cases must not be included in the typescript but placed after it in an appendix.

4. Each essay must be distinguished by a motto and accompanied by a sealed envelope containing the name and address of the author and having on the outside of the envelope the motto corresponding to that on the essay.

5. Essays must reach the secretary on or before December 1 in the appropriate year.

6. The prize essay and accompanying illustrations and preparations will become the property of the College.

7. Authors may claim essays not awarded prizes upon authenticated application within two years.

8. If no essay is adjudged worthy of the prize no award shall be made.

9. Any unexpended interest may be added to the principal of the fund.

The subject for the next essay will be "The Pathogenesis and Surgical Treatment of Developmental Abnormalities of the Kidneys and Ureters". All entries must be in the hands of the secretary of the College on or before December 1, 1956.

Notice.

VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION.

Annual Church Services.

On Sunday, February 13, 1955, the sixth annual special services for the medical profession will be held in St. Paul's Cathedral and St. Patrick's Cathedral at 11 a.m. The

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED JANUARY 8, 1955.¹

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	4(2)	4(4)	4(2)	..	..	..	..	..	12
Amoebiasis .. ..	..	..	..	..	..	..	..	..	..
Ancylostomiasis .. ..	..	..	1	..	..	..	..	..	1
Anthrax .. ..	..	..	..	..	..	..	..	..	..
Bilharziasis .. ..	..	..	..	..	..	..	..	..	..
Brucellosis	2(1)	..	..	..	..	..	..	..	2
Cholera .. ..	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	1(1)	..	..	..	1	..	..	..	2
Dengue .. ..	..	..	..	..	..	..	..	..	..
Diarrhoea (Infantile)	1	23(20)	4(4)	..	2(2)	..	..	1	31
Diphtheria	4(3)	3(1)	3(3)	..	2(2)	..	..	..	12
Dysentery (Bacillary) .. ..	..	..	12(11)	..	5(4)	..	..	..	17
Encephalitis .. ..	..	..	..	..	..	..	..	..	..
Filariasis .. ..	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice .. ..	..	..	..	..	..	..	..	..	..
Hydatid	65(34)	47(33)	..	2(1)	2	1	..	..	117
Infective Hepatitis .. ..	..	..	..	..	..	..	..	..	..
Lead Poisoning .. ..	..	..	..	..	..	..	..	..	..
Leprosy .. ..	..	..	..	..	..	..	..	..	..
Leptospirosis .. ..	..	..	1	..	..	..	..	..	1
Malaria .. ..	..	1	2(2)	..	..	..	..	..	3
Meningococcal Infection	3(2)	1(1)	2	..	1(1)	..	..	..	7
Ophthalmia .. ..	..	..	..	..	..	..	..	..	..
Ornithosis .. ..	..	..	..	..	..	..	..	..	..
Paratyphoid .. ..	..	..	..	..	..	..	..	..	..
Plague .. ..	..	..	..	..	..	..	..	..	..
Poliomyelitis	2(1)	..	8(2)	3(2)	..	2(1)	..	..	15
Puerperal Fever .. ..	..	1(1)	..	..	..	..	..	..	1
Rubella .. ..	..	25(22)	..	..	9(7)	..	..	..	34
Salmonella Infection .. ..	..	..	..	..	1(1)	..	1	..	2
Scarlet Fever	15(12)	25(23)	6(2)	1(1)	2	..	..	..	49
Smallpox .. ..	..	1(1)	..	..	..	..	..	..	1
Tetanus .. ..	..	..	..	..	3	..	..	..	3
Trachoma .. ..	..	..	..	..	..	..	..	..	..
Trichinosis .. ..	..	..	..	..	..	..	..	..	..
Tuberculosis	37(22)	24(22)	3(3)	4(2)	4(3)	2	2	..	76
Typhoid Fever .. ..	..	..	1(1)	..	..	..	..	..	1
Typhus (Flea, Mite- and Tick-borne) .. ..	..	..	4	..	1	..	..	..	5
Typhus (Louse-borne) .. ..	..	..	..	..	..	..	..	..	..
Yellow Fever .. ..	..	..	..	..	..	..	..	..	..

¹ Figures in parentheses are those for the metropolitan area.

preacher at St. Paul's Cathedral will be the Reverend G. H. Codrington, M.A., Th.L., and the preacher at St. Patrick's Cathedral will be the Reverend Dr. Leo Kelly, D.C.L.

Members will enter the cathedrals in procession and are asked to assemble in the precincts fifteen minutes before the commencement of the services. It is desired that academic dress be worn, but this is not essential. All members (whether or not they are wearing academic dress) are asked to join the processions and sit together in a group.

The Branch Council invites medical students to attend the services and, also, to join the processions.

Separate seating will be reserved for members' families.

Nominations and Elections.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Ahern, Thomas Francis, M.B., 1940 (Univ. Sydney), Deniliquin Street, Tocumwal, New South Wales.
 Buchhorn, Francis Joseph, M.B., 1948 (Univ. Sydney), c.o. Dr. A. Rumore, Punchbowl Road, Punchbowl.
 Kearley, Alan Spence, M.B., B.S., 1951 (Univ. Sydney), c.o. Dr. T. W. Wiley, 56 Henderson Road, Alexandria.

The undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Barbour, Robert Angus (qualified 1954) (Univ. Adelaide), 105 Watson Avenue, Toorak Gardens, South Australia.
 Branson, Dean Martin (qualified 1954) (Univ. Adelaide), 37 Greenhill Road, Dulwich, South Australia.
 Brummitt, Robert (qualified 1954) (Univ. Adelaide), 11 Northcote Terrace, Medindie, South Australia.
 Bodmer, Noel Frederick John (qualified 1954) (Univ. Adelaide), 22 Persic Street, Largs North, South Australia.
 Handley, Joan Marie (qualified 1954) (Univ. Adelaide), 43 South Esplanade, Glenelg, South Australia.
 Hobbs, Graham Alan (qualified 1954) (Univ. Adelaide), 84 Kensington Road, Toorak Gardens, South Australia.
 Kearney, Margaret Patricia (qualified 1954) (Univ. Adelaide), 1 Cross Road, Kingswood, South Australia.
 Lawson, Margaret Leaine (qualified 1954) (Univ. Adelaide), 13 Redmond Street, Collinswood, South Australia.
 Munday, Robert Neill (qualified 1954) (Univ. Adelaide), 48 Northumberland Street, Tasmore, South Australia.
 Mauger, Alan Harris (qualified 1954) (Univ. Adelaide), 41 Manton Street, Hindmarsh, South Australia.
 Murrell, Helen Calvert (qualified 1954) (Univ. Adelaide), "Hathaway", Ayers Hill Road, Mount Lofty, South Australia.
 Pak-Poy, Reginald Kenneth Felix (qualified 1954) (Univ. Adelaide), 5 Glynde Road, Trinity Gardens, South Australia.
 Playford, Margaret Claire (qualified 1954) (Univ. Adelaide), Norton Summit, South Australia.
 Preston, John Arthur Rowland (qualified 1954) (Univ. Adelaide), 29 Avenue Street, Millswood, South Australia.
 Steele, David MacDonald (qualified 1954) (Univ. Adelaide), 31 Avenue Street, Millswood, South Australia.
 Webling, Donald D'Arcy (qualified 1954) (Univ. Adelaide), 35 South Terrace, Adelaide.
 Fuller, Clarence Oliver, M.B., B.S., 1954 (qualified 1953) (Univ. Adelaide), 63 Glynde Road, Firie, South Australia.
 Jessup, Leonard Clive, M.B., B.S., 1952 (Univ. Adelaide), 6 Palmerston Road, North Unley, South Australia.

The undermentioned have been elected as members of the South Australian Branch of the British Medical Association: Scholz, William Herbert, M.B., B.S., 1954 (Univ. Adelaide) (qualified 1953); Lister, James Dick, M.B., B.S., 1954 (Univ. Adelaide) (qualified 1953).

Medical Appointments.

Dr. J. A. Connolly has been appointed government medical officer at Bahlha, Queensland.

Deaths.

The following deaths have been announced:

HUNT.—Percival Sydney Hunt, on December 31, 1954, at Sydney.

SUTTON.—Mordaunt Graham Sutton, on January 20, 1955, at Brisbane.

DAVIDSON.—Arthur Madgwick Davidson, on January 20, 1955, at Sydney.

MITCHELL.—Paul Wanostrocht Mitchell, on January 24, 1955, at Sydney.

PEARLMAN.—Henry Pearlman, on January 26, 1955, at Sydney.

Diary for the Month.

FEB. 8.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 FEB. 11.—Tasmanian Branch, B.M.A.: Branch Council Meeting.
 FEB. 11.—Queensland Branch, B.M.A.: Council Meeting.
 FEB. 14.—Victorian Branch, B.M.A.: Finance Subcommittee.
 FEB. 15.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 FEB. 16.—Victorian Branch, B.M.A.: Branch Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205 Saint George's Terrace, Perth): Norseman Hospital; all contract practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2-3.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

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